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DIESEL RAILWAY TRACTION

The April issue of this RAILWAY GAZETTE publication illustrating and describing developments in Diesel Railway Traction, will be ready on April 1, price 2s.

THE PROBLEM OF RAILWAY PASSENGER FARES AND TRAIN SERVICES

A suggested plan for equalising
passenger travel over both rail
and road services

BY J. H. LAUNDY

Formerly Audit Accountant, Southern Railway

PRICE ONE SHILLING

THE RAILWAY GAZETTE
33, TOTHILL STREET, WESTMINSTER, S.W.1

Enginemens' Hostels

WE are at a loss to find a suitable adjective to describe the Western Region's new hostel adjoining the Old Oak Common engine shed, London. It would be easy to call it luxurious, but that would give quite a false impression. Cheerful comfort and a "home from home" would all be suitable descriptions. Evidently its designers have studied closely the latest practice in staff canteens, holiday camps, and army hostels. No doubt many of its occupants and casual users of its amenities will regard the hostel as one of the benefits of nationalisation. The large attendance of members of the Ministry of Transport, the British Transport Commission, and the Railway Executive at the formal opening by the Minister of Transport last week gave colour to this view. It is, however, an entirely pre-nationalisation scheme formulated by the directors of the late Great Western Railway Company and, but for the delays in getting the necessary permits and supplies, would have been opened sooner. Old Oak Common engine shed and carriage sidings were opened over forty years ago, in 1904, after the closing down of the original locomotive depot at Westbourne Park, and the engine shed is still the most modern in London. At that time the Great Western built a whole series of standard locomotive depots throughout the system—Old Oak Common being the largest, comprising four units. After grouping, the L.M.S.R. remodelled many of its locomotive depots; but the G.W.R. undoubtedly was the pioneer in this work. Reverting to enginemens' hostels, the old Midland Railway was the first to establish them on a large scale and for many years was the only company that provided them. At the present time, we gather, there are two schools of thought amongst the Railway Executive—one in favour of an extension of double home turns and the other wishing to abolish them altogether.

Transport Charges

Elsewhere in this issue we report the speeches which were made at the opening of the new hostel. Principal public interest has attached to a statement by the Minister of Transport to the effect that the limit of increased charges on the railways has been reached. Commenting on the remarks by Mr. Barnes, *The Economist* says that perhaps it is not unduly cynical to suggest that what impelled the Minister to his conclusion was less consideration for the pockets of railway users than the accumulating evidence that the point of diminishing returns has already been passed. Pointing out that the British Transport Commission is not covering its costs, that newspaper says that the only solution which can be heard in public is the old device of compelling road transport to charge more than it needs so as to force traffic back on to the railways. The nationalisation of transport will not have justified itself until it provides the country with a better transport service at a lower real cost than the old competitive system. *The Economist* points out that "nobody, either at the Ministry of Transport or at the British Transport Commission, has yet given any public sign of having an inkling of how it is to be done."

Railway Wage Claims Rejected

On Monday last the Railway Staff National Tribunal rejected the claim by the N.U.R. for a wage increase of 12s. 6d. a week for its members. In rejecting the claim the Tribunal has followed the same course as that taken in the case of similar claims put forward on behalf of N.U.R. members employed by the Hotels Executive and London Transport. It has been estimated that the cost of granting the claims in full would add more than £22 million a year to the railway wages bill and British Railways are not in a position to bear this cost at the present time without increasing charges. The case for the men, which was first argued by the union last autumn, was based mainly on the increase in the cost of living since the previous 7s. 6d. increase, together with the claim that the position of the lowest paid workers was difficult, while the employers maintained that earnings had in fact increased in proportion to the cost of living, and that in any case very few employees were in receipt of the minimum wage. This is the first major wage claim to be rejected

outright by arbitrating bodies since the Government introduced its policy of stabilising personal incomes, etc., and the findings are final. The National Executive of the N.U.R. is meeting to consider the position and there is a possibility that new claims may be presented.

* * *

Dearer Travel in Eire

As was briefly recorded in our last week's issue, the Irish Minister for Industry & Commerce has approved an increase of approximately 16½ per cent. on single rail fares and of 8½ per cent. on return fares over the C.I.E. system. This brings the present third-class single fare to 1½d. a mile from 1¼d. a mile. The increase is to come into effect on a decision by the company to operate it. Provincial bus fares are to be increased by approximately 16½ per cent. and city bus and tram services charges are also raised. The increased railway fares are expected to produce about £110,000 and the higher road fares £750,000. Other railways in Ireland also have sought permission to increase fares and rates on both rail and road services and these have been approved. On the Great Northern Railway (Ireland) the increase on single and return rail fares is about 11 per cent. The Minister has considered the applications in conjunction with the recommendations made by Sir James Milne in his report on transport in Ireland. The new passenger rail fares proposed by C.I.E. are below the maximum set out in an Order made in April, 1947, but in other instances the companies must give notice of their proposals, so that any representations by the public may be considered by the Minister.

* * *

Canadian Pacific Railway Results in 1948

The preliminary results for 1948 issued by the Canadian Pacific Railway Company show that gross earnings were \$36,663,783 higher at \$355,249,702, as against \$318,585,919 in 1947, but increased working expenses totalling \$336,830,536 reduced net earnings by \$4,473,023 to \$18,419,166, compared with \$22,892,189 for the preceding year. When other income of \$24,864,949 is added, the income available for fixed charges is \$43,284,115. After deduction of \$15,890,264 to cover these charges, there is a final net income of \$27,393,851. As foreshadowed in February, the net railway earnings are insufficient for the payment of any dividend, and for the maintenance of the final dividend at 3 per cent., making 5 per cent. for the year, the income from other sources is responsible. Of this "other income," dividends from the company's investments rose from \$14,547,415 to \$19,806,469, but net earnings from ocean and coastal steamships, hotel, communication, and miscellaneous properties, and from interest, exchange, and separately-operated properties were all reduced. The dividend, payable on March 31 next, will take \$10,050,000, which has not been deducted in the accounts for 1948.

* * *

London Bus Types

Although the RT type, incorporating an A.E.C. chassis, constitutes the standard double-deck post-war bus of the London Transport Executive, and 960 or so of the type are already in service, a variety of reasons is causing certain vehicles to appear with unfamiliar type lettering such as RTL, RTC, SRT, and RTW. The RTL is the Leyland version of the RT chassis and has similar features of design. The RTC is the experimental double-deck Green Line coach version, which was described and illustrated in our February 4 issue. A new designation is the SRT, which has a pre-war STL A.E.C. chassis adapted to carry the same body as the RT; a programme for the adapting of some 200 STL chassis by fitting new RT bodies has been authorised as one of the many steps to counterbalance withdrawals. The RTW is the new 8-ft. wide bus with the same components as the RTL, but offering the greater internal width that has already proved popular on new trolleybuses. To begin with, the operation of the RTW type, described last week, will be confined to outer suburban routes without tram tracks or narrow sections of road. At a recent press conference, Lord Latham said that the basic RT type had given great encouragement to the crews,

to garage maintenance staffs, and to passengers. It had fully justified its advanced features of design, and no major change had been found necessary, so that the quantity production of similar vehicles could go forward unchecked.

* * *

Radio Communication for Hump Shunting

Whitemoor up marshalling yard in Cambridgeshire has been selected for the first application of radio-telephony to practical railway operation in Great Britain. Elsewhere in this issue details are given of the installation, which is part of an extensive programme of trials being sponsored by the Railway Executive in the application of radio to both traffic and engineering operations. A fixed radio transmitter has been provided in the control tower, with remote control in the foreman's cabin, and mobile equipment has been installed in the first of the four diesel-electric shunting locomotives to be fitted. The system is designed to reduce the unproductive time occupied by earlier means of communication between ground control staff and shunting locomotive drivers, and, apart from giving an easy means of communication under normal conditions, should prove of considerable value in the event of such contingencies as fog and snow. Although transmission usually is between the foreman's hump-cabin and the shunting engines, facilities have been provided for the point controller to break in and make announcements to drivers, in an emergency.

* * *

Longbenton Station, North Eastern Region

In July, 1947, the former L.N.E.R. opened a station at Longbenton on the North Tyneside electrified line to serve the staff of the Ministry of National Insurance, which had been transferred there on the completion of new offices. The whole of the station accommodation was not built at that time. Recently the work has been completed and photographs of the station are reproduced elsewhere in this issue. The platforms are 16 ft. wide in the centre and taper to 8 ft. at the ends. They are 500 ft. long and are linked by a covered footbridge in the centre. A limited amount of covered platform also is provided which can be extended if the need arises. The accommodation consists of a circulating area, with a combined booking, collecting, and enquiry office controlling in and out barriers, together with spaces for kiosks and a bookstall. The station has been planned to permit extensions to deal with parcels and other traffic when the development of the area, scheduled for residential purposes, is further advanced. The whole of the work was carried out by the staff of the District Engineer, Newcastle, and the buildings were designed by Mr. A. N. Thorpe, F.R.I.B.A., Architect in the Department of the Civil Engineer of the North Eastern Region.

* * *

The Kandó System of Single-Phase Traction

Interest in the use of single-phase current at 50 cycles per second for traction has been stimulated by the experimental locomotive recently designed by French and Swiss engineers. A news item from Hungary now recalls an existing main-line electrification at this frequency, although not involving the use of a single-phase 50-cycle supply in the traction motors. The line concerned is from Budapest to the Austrian frontier at Hegyeshalom, which is worked on the Kandó system, wherein the high-tension single-phase supply picked up from the overhead contact line at the normal industrial frequency of 50 cycles is converted to polyphase current by rotary machinery in the locomotives. Originally, each locomotive was powered by a single 2,500-h.p. polyphase induction motor, with four running speeds obtained by pole-changing. It is now announced that a 3,200-h.p. Ganz-Kandó machine has been designed for the route, having two power bogies with individual axle drive from five traction motors. A difference in principle from the earlier Kandó locomotives lies in speed control by varying the output frequency of the phase converter, five running speeds being obtained in this way. This system has enabled the traction motors to be made light and compact, whereas the original pole-changing design required 16 slip-rings for the connections to the speed-control contactors.

As well as utilising industrial frequency power, the Kando system enables the automatic regenerative characteristics of three-phase motors to be enjoyed without the complication of a double overhead contact line.

* * * *

Successful Track Drainage at Water-Troughs

In the United States, as in this country, special measures are taken to ensure efficient drainage of the track in the vicinity of water-troughs, and to this end, the New York Central System recently has installed new drainage systems at five sets of water-troughs—four of them serving quadruple tracks—on its high-speed main line between Buffalo and Chicago. The work carried out was substantially similar in all five places and is described elsewhere in this issue. The combination of a concrete-slab overall paving at sleeper level with a special form of pipe for subsoil drainage is understood to have proved quite satisfactory. The cradle- or dish-top pipes with spigot and socket joints, moulded with lugs to keep open a transverse slot in the top for water entry, are of unusual interest. So also is the design of the joint, providing by means of chamfering, an unimpeded direct inflow in the direction of the pipeline gradient, which, it is claimed, keeps the slots from becoming clogged with solid matter. As water is taken by trains running at up to 80 m.p.h., the volume of water splashed over the track and formation is considerable.

* * * *

Southern Region Electric Locomotives

Until Mr. C. M. Cock read his paper on Southern Railway electrification to the Institution of Electrical Engineers in 1947, published comment on the Southern electric locomotives dwelt on the special motor-generator control arrangements mainly as a means of maintaining power while bridging gaps in the conductor rail. Mr. Cock's paper showed that the system in fact provided an exceptionally flexible method of controlling d.c. traction motors over a wide range of running speeds, and this week we publish an article on the third locomotive in the series which fills in details regarding which there has been speculation for a considerable time. As a product of Southern conditions, the design had to meet the problem of gaps in the conductor rail, but it was equally important for the locomotive to be a mixed-traffic type, so as to earn its keep throughout the twenty-four hours. Conventional d.c. locomotive resistance control systems provide some 12 or 15 economical running speeds. The Southern locomotives operate economically at 26 speeds, adapted to a great variety of loads. There has been continuous development in the design, and the latest locomotive has more convenient arrangements for entering on the weak-field notches, while retaining full protection against this being done inadvertently. Clearly, the Southern's reputation for originality in steam locomotive technique is matched by its electrical activities.

* * * *

Performance of Roller Bearing Axleboxes

A report on the performance of a British Timken roller bearing axlebox which went into service on a class "1E" 0-4-4-0 electric locomotive of the South African Railways in 1936 has been received recently from the makers of the axlebox. The axlebox has run one million miles, and the almost negligible rate of wear on the bearing surfaces is remarkable. As regards the axlebox, a small amount of wear (about 0.1 in.) was observed in the width across the horn guide faces and about 0.3 in. between the horn guide flanges. Wear on the cup spacer ring was only 0.0009 in. Coming to the bearing, the excellent condition of all the working surfaces is remarkable; wear could not be measured until a special surface measuring instrument was applied. Wear on the tracks was found to be slightly over 0.00003 in. A very small amount of ovality was also discernible in the outside diameters of the cups. A minute quantity of foreign matter caused slight indentations in the roller track of the inner race. The rolls were in perfect condition, with no trace of scuffing. Little wear could be detected in the cages, and the increase in end-play was within 0.0057 in. The axlebox, in essentially the same condition as received, is being returned for further service; its efficiency is in no way impaired, and indeed there is nothing in its present condition to indicate what its ultimate length of life may be.

Indian Railway Enquiry Committee, 1947—I

AFTER the close of the second world war, the Government of India was faced with demands from the All-India Railwaymen's Federation for higher scales of pay and other improvements in conditions of service. At the same time the Government was concerned at the increase in railway working expenses, which had taken place during the war and was out of proportion to the increase in traffic. In particular, large additions had been made to the number of railway employees and these were not justified by the increase in the quantum of work done. The return of peace had not brought about any general retrenchment. The Government accordingly decided to appoint the Indian Railway Enquiry Committee, 1947, with the following terms of reference:—

1. Suggesting ways and means of securing improvement in net earnings by:

(a) Economies in all branches of railway administration, and (b) any other means.

2. Ascertaining the extent of staff surplus to requirements and suggesting practical methods of absorbing them in railway service.

Originally the Committee consisted of seven members, with Mr. K. C. Neogy as Chairman. Between April and October, 1947, it made a tour of inspection and collected a mass of evidence from various sources, but its activities were suspended by the upheaval which resulted from partition. The outcome was the reconstitution of the Committee as below:—

CHAIRMAN

Pandit Hirday Nath Kunzru.

A well-known social worker from the United Provinces, Member of the Servants of India Society. Member of the Legislative Assembly for many years. At present Member of the Constituent Assembly.

MEMBERS

Sir Mohommad Yamin Khan.

Ex-member of the Muslim League. Late Vice-President of the Legislative Assembly. Zemindar (land owner) of Meerut (United Provinces). Member of at least one Round Table Conference.

Mr. S. Guruswami.

Labour leader. General Secretary of the Indian Railwaymen's Federation. A moderate, from Madras.

Sir George Cuffe.

Formerly General Manager, Bombay Baroda & Central India Railway. Earlier Agent & General Manager, Assam Railways & Trading Co. Ltd. 1940; General Manager Great Indian Peninsula Railway; 1943; transferred as General Manager of the Bengal & Assam Railway. Director-General of Railways, Calcutta area, 1945.

Mr. J. N. Nanda.

Then General Manager of the Nizam's State Railway (Civil Engineer).

Mr. K. R. Rama Iyer.

Member of Indian Audit and Accounts Service. Late Chief Accounts Officer, Oudh Tirhut Railway.

SECRETARY

Mr. M. N. Chakravarti.

An officer of the Transportation (Traffic) and Commercial Departments of the then North Western Railway.

Mr. J. Mehra, of the Bombay Baroda & Central India Railway, acted as the Committee's Mechanical Officer, Mr. S. K. Datta Ray of the East Indian Railway as Statistical Officer and Mr. V. R. Babu Mudaliar of the Mysore State Railway as Assistant Secretary. The Committee resumed its work in March, 1948, when conditions were still far from normal because of unprecedented political and communal unrest. In November the Committee finished its labours and submitted an exhaustive report covering almost every phase of railway organisation and operation. The report runs to 244 pages, plus 31 appendices. We can give only a broad outline of its contents and state its principal recommendations.

The Committee opens with a general survey of the Indian Government Railways, whose financial outlook, in its opinion, is by no means bright. The growth of operating expenses has outstripped the increase in traffic receipts. Nearly all the stock operating statistics show a marked deterioration from pre-war results. So the Committee proceeds to examine the work of the departments in detail.

CIVIL ENGINEERING

The report recommends that the relaying programme for the next five years should be implemented as a matter of urgency. At a time when British Railways are adopting heavier rails as a new standard, it is noteworthy to find the

Committee suggesting that lighter and modified sections of rails should be evolved for Indian Railways. The present standard rail for Indian broad-gauge lines is "90 lb. flat-footed" and the Committee thinks that weight may not be necessary for the lighter axle-loads of modern locomotives. Another proposal is that an officer should be placed on special duty to study methods of track maintenance. For example, the use of mechanical appliances should be extended, experiments with mobile gangs pursued and gang lengths increased to 4 miles. The Committee does not approve the manufacture of materials in engineering workshops which cannot be justified on the score of economy, but says there is wide scope for reconditioning track materials and tools.

MECHANICAL ENGINEERING

The report points out that locomotives user was so low in 1946-47 that at least 10 per cent. more locomotives were employed than were necessary. All railways are heavily in arrears with locomotive repairs. The number of passenger coaches under or awaiting repairs is unduly high. Too many wagons are unserviceable and the number of days they are in shops for repairs has gone up by 20 per cent. on the pre-war figure. On the other hand, the report states that there appears to be a surplus of staff in the workshops and attributes the present low output to faulty direction and management.

The Committee suggests that refresher courses should be devised for the comparatively inexperienced men who have to fill the rôle of supervisors, and adds that training facilities for the ordinary staff should be improved. A proper costing system is considered to be lacking in the workshops, though the need for remedying this defect was stressed by Sir Arthur Dickinson in his report of 1926-27 and later by the Raven and Wedgwood Committees. The report proposes that properly qualified officers should be entrusted with the duty of giving effect to a scheme of full costing without delay.

There is an uneconomical diversity in types of rolling stock. The report endorses the policy of the Railway Board in trying to reduce the classes of broad-gauge locomotives from 166 to 9 and to devise common standards for coaches and wagons. The Committee emphasises the undesirability of bulk ordering of engines of new design without adequate tests.

The maintenance of locomotives in running sheds was found to be so poor that the Committee does not favour the concentration of more than 100 engines at any one shed. There has been a fall of about 66 per cent. in the number of miles per engine failure in 1947-48 as compared with 1938-39, indicating inadequate attention to motive power at many sheds. The general adoption of the procedure followed by the B.N.R. in dealing with locomotive repairs is recommended. In present circumstances, it is considered that the Chief Mechanical Engineer should control all mechanical work and staff in running sheds, but Sir George Cuffe is of opinion that under normal conditions the Operating Department should be responsible for shed work.

ELECTRICAL ENGINEERING

The report discusses at length the question whether electrical work on the railways should be centralised under a Chief Electrical Engineer or distributed amongst the various departments concerned in one branch or another of electrical work. The Committee favours a division of the work between the motive power, civil engineering, and mechanical engineering departments, except for electric traction which is so specialised that it must be provided for separately. The basis of this proposal is that all technical departments should become electrical departments and that all their officers should have electrical qualifications. This is one of the most debatable recommendations in the report.

Admittedly traction engineers in India are few in number and the Railway Board has no specialist in its office who can criticise electrification schemes. The report therefore recommends the appointment of a senior officer to advise the Board on electrification schemes and to arrange the training of traction engineers. Later, his duties might be extended to co-ordinating electrical research on railway problems. He would be then in effect a Chief Electrical Engineer on the Board's staff. As the Committee takes the view that there can be no question as to the importance of extending electrification on

Indian railways, whenever financially justified, and considers that each railway should be capable of working out the details of its own schemes, is there not an equally strong case for a Chief Electrical Engineer on some of the larger systems? The Committee recognises that an independent traction department is required on any railway which has a large electrified mileage, but prefers the title of Traction Superintendent for the head of it.

OPERATION

On its tours the Committee found that in spite of an increasing number of locomotives and wagons, the tonnage of goods handled had declined. Production was suffering because of the failure of the railways to move raw materials and coal. This was due, to a large extent, to reduced output of work by the staff and partly to a lack of proper initiative, direction and guidance from the top.

Facilities at terminals were inadequate and delays in marshalling yards inordinate. The report recommends that in large cities, where the case for more accommodation is clear, plans for extending terminals should be formulated, but suggests that yard remodelling should be deferred until it is shown that available facilities are being used to capacity. Supervisory staff in yards should be selected with care, be properly paid and given opportunities for advancement. Movement officers should also spend more time in studying yard work.

Among many causes of train delays "on the run," the Committee emphasises bad controlling and defective supervision. It stresses the need for a co-ordinated control chart, showing movement particulars of trains, prepared by a responsible official, who should compare the charts over a period and determine the chronic causes of delay. There are 53 break-of-gauge transshipment points which hold up traffic; the report recommends that a small technical committee be set up in three years' time to examine the gauge question generally.

Passenger traffic has more than doubled since 1938-39, and has been moved at the cost of dangerous overcrowding, due mainly to shortage of rolling stock. Speed and punctuality have fallen to a state which makes "melancholy reading." The report says the first essential is to restore punctuality and to increase train services which should revert gradually to 1939 speed. It therefore recommends that the provision of steel for passenger coaches should receive the highest priority, even at the expense of wagon construction.

The Committee support the views expressed in the Inglis-Appleton report about the importance of improving the train control system. It observed that some of the controllers were merely recorders, reluctant to take chances, and that hardly any planning was done. Better selection and training of controllers is advocated.

The use of motive power was at its best during 1941-42, but engine performance in recent years has been very low, apart from the results attained by the Great Indian Peninsula, the Bengal Nagpur and the Madras & Southern Mahratta Railways. These lines pool their locomotives, and the Committee presses, as one of its main proposals, that all railways should adopt that practice. It also suggests that extended engine runs should be developed, at least with through mail and express trains, to cover working over more than one railway. The report definitely recommends as an objective the establishment of trans-Indian runs up to 1,250 miles without change of engine.

Indian Railways have had much the same difficulties over locomotive coal as British Railways have experienced. The quality of coal has deteriorated and the quantity consumed has risen in relation to work done. As the fuel bill on Indian Railways is about 12 per cent. of the total operating expenses, the report recommends that the system of checking fuel consumption in force on the Nizam's State Railway should be adopted by the Government Railways. The Committee also considers that there is a case for further experiments with oil-burning locomotives on railways which serve ports and are far from coalfields.

The Wedgwood Committee considered that signalling in India was too expensive and advised the use of double-wire working of points. The report endorses that view, and recommends that a signal engineer be attached to the Railway

Board's office to pass signal and interlocking schemes which are economically sound. A second suggestion is that a party of junior signal officers should be sent to study modern practice on the Continent of Europe. Apparently the Committee has not felt that an inquiry into the U.S.A. system of centralised traffic control might be worth while. It does, however, recommend that a new Rule Book should be prepared to contain all orders necessary for safety and to point the way for future development.

(To be continued.)

Unusual Practice in Bridge Renewals

FROM the report entitled "Recovery and Strengthening of Metal Bridges that have Reached the Theoretical Limit of Safety" to the International Railway Congress Association, referred to on page 318 of this issue, there emerge one or two points of unusual interest. For instance, it is standard practice on the Tunisian Sfax-Gafsa Railway to take up all steel spans of from 12 ft. to 50 ft. in length periodically, and send them to shops for overhaul, like a locomotive. According to whether each individual span is to be re-erected again in the same place or used elsewhere after reconditioning, its place in the road is taken by a temporary or by a new span. Such replacements and repairs are carried out according to a systematic programme, and the practice is considered to be justified financially.

The Netherlands Railways have found it advisable to construct a special vehicle for girder-span renewals. Its inception was due to the necessity for replacing 17 bridges, situated side by side under adjacent shunting roads in a busy yard, and each consisting of two 92-ft. spans. Speed was important, and the first of these spans therefore, was taken to shops, strengthened, and then used to replace another span, thus released for strengthening. The method adopted, to use a free quotation of the report, is as follows: "The special wagon makes it possible to carry the new span above the old one, lift the latter simultaneously with the new one, tipping the whole through 180 deg., and lowering the new span into place. Traffic is interrupted for less than 1½ hr." Similar-type wagons have since been built on various lines for handling and erecting considerably longer spans.

The Beira Railway and Port

LAST August it was announced that the Portuguese Government had "denounced" the Beira port concession, and that the company working the port had been notified that, as from January 1, 1949, control of the port would be taken over by the Administration of the Colony. Whether this impending change was entirely unexpected by the port company is not known, but the announcement of it certainly surprised the Rhodesian public, which is now speculating on the future of Rhodesia under the new organisation.

Since then it has been stated by the Portuguese Government that it does not recognise any obligation fully to redeem the capital, but that is a private issue between the port company and the Portuguese Government. What concerns the British public of Rhodesia more is that, because of an impasse over new working arrangements for the port, the Beira Railway Company has also been expropriated by the Portuguese Government as a mutually agreed alternative at a price of £4,000,000, as recorded in our issue of December 3. It is understood that the London Stock Exchange expected £6,000,000, but Sir Arthur Griffin, General Manager, Rhodesia Railways, has indicated in a press interview that the amount agreed upon may be regarded as a fair price "as between a willing seller and a willing buyer," and that the purchase price plus future necessary financial commitments should not impose a burden which would lead to increased costs of transport.

The facts are that up to the present the Rhodesia Railways have operated the Beira Railway and what is known as the "land side" of the port. Despite the change in control of the port it was hoped that satisfactory working arrangements would be agreed on which would avoid dislocating the existing working, but apparently it proved impossible for the British authorities to obtain extensions of the old con-

cession on mutually satisfactory terms. Meanwhile, the Portuguese Government had the right in any event to expropriate the Beira Railway eight years hence, a factor which precluded the possibility of raising fresh capital necessary for additional equipment and development, thus embarrassing the railway and reacting on efficient working on which both Rhodesia and the port so much depend.

In addition, there is the immediate need of the port for capital improvements to the value of £2,000,000 to enable it to handle more traffic in a manner and on a basis which will attract traffic. Moreover, eight years of uncertainty as to the future would have been intolerable to the people of Rhodesia, hence, having regard to all the circumstances, it seems that no other course than that taken was practicable. It is only natural that the Portuguese should want to own and operate both the railway and the port, but the territory has benefited greatly by the pioneer endeavours of British capital and enterprise during half a century. The gross harbour tonnage handled at Beira port during the twelve months ended September 30, 1947 (the latest figure available) amounted to 1,331,925 tons, an increase of 15.2 per cent. over 1946. Landed cargoes increased by 44.5 per cent.

In terms of an Anglo-Portuguese Treaty of 1891, the Portuguese Government undertook to have a railway constructed from Fontesville (35 miles inland from Beira) to what is now Rhodesia. The rights were ceded and eventually brought to fruition by the Beira Railway Company. Much difficulty was experienced in raising the capital even at heavy discounts for the prospects of the ultimate success of the venture were far from bright. The construction engineers had the problem of sixty miles of marshy malarial swamp at the beginning and mountainous terrain at the inland end rising to 4,000 ft.

The odds have been described as "well-nigh overwhelming." So great were the difficulties that it took more than five years of courageous struggle to complete the total section from Beira to Umtali, only 203 miles in length. In each of the years 1892 and 1893 sixty per cent. of the construction staff died. If British capital and engineers had not undertaken the construction of the line it is unlikely that it would have been built at all.

The following details of the annual report of the Beira Railway Company for the twelve months ended September 30, 1947, indicate that the Portuguese have acquired a prosperous railway at a favourable price without the troubles of construction or the burdens of the early unremunerative years of development:

	1945-46	1946-47
Gross revenue	£950,694	£1,167,902
Working expenditure	£524,680	£639,860
Net earnings	£426,014	£528,042
Passenger revenue	£51,451	£55,920
Train miles	761,152	861,306
General merchandise (tons)	474,534	617,892
Agricultural produce (tons)	101,286	84,859
Chrome ore	164,269	164,052
Copper and copper matte	243,867	257,787
Coal and coke	14,620	18,817
Asbestos and other minerals	70,566	101,744

There is an important aspect which, in the background for many years, now has become suddenly a matter of prime concern for Rhodesia and the British Government—the problem of an alternative route to the coast. For more than thirty years the Rhodesia press and various far-sighted persons have drawn attention again and again to a possibility which has now come about—the passage of the principal port and railway that serves Rhodesia to the control of a non-British government. The construction of an alternative route has been shelved in the past on economic grounds; now it has become a live issue for other reasons long foreseen. The well-being of Rhodesia is now at stake, for there are strategic as well as economic needs, so vital are the railways of South-Central Africa in relation to what has been described diplomatically as "the over-all picture of African defence."

Rhodesia cannot immediately acquire another port, and though the Union ports can and do serve Rhodesia, they cannot do so as well as Beira. For some time to come—until the provision of new trunk lines to Kenya and Tanganyika, outlined in our December 10, 1948, issue—Rhodesia must rely on the mutual interest, interdependence, and goodwill of the Portuguese to produce a reasonable working agreement.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

The British Transport Officers' Guild

The British Transport Officers' Guild,
129, Finsbury Pavement,
London, E.C.2. March 17

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In your issue of March 4 there appeared an editorial in regard to the Civil Service and railway salaries, pointing out that the effect of nationalisation has been to put railway officers in a considerably less fortunate position than civil servants, and that the British Transport Commission is seeking to establish lower scales than those proposed by the Chorley Committee.

May I draw the attention of your readers to the British Transport Officers' Guild, to which reference has been made through the hospitality of your columns in the past, and the objects of which provide for the protection of members' rights and interests individually and collectively, and to maintain and improve the status of its members?

The offices of the Guild are at 129, Finsbury Pavement, London, E.C.2, and the Secretary is Mr. J. J. Tobin.

Yours faithfully,

A. L. CASTLEMAN,
Master of the Guild

Northolt and Heathrow

51, Goldsmith Avenue,
Acton, W.3. February 28

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Why not direct railway communication with Northolt and Heathrow?

An illustrated plan of a new method to reach Northolt and London Airport from Marble Arch on a proposed overhead suspended track with a speed of 200 m.p.h., was published in the *Evening Standard* on February 26, 1949.

As the distance is under 12 miles, has this proposed scheme any sound foundation for proposing to spend millions, when both airports should be in direct communication by now from both Paddington and Marylebone by an hourly regular non-stop service, which would provide also the adjacent residential areas with an express service to and from London, and contribute to the success likely to be achieved?

A short connection of about 1½ miles from the G.W.R. main line at Hayes across an agricultural area would make the journey less than half-an-hour from Paddington, and Northolt could be served in the same manner with great advantage and thousands of gal. of petrol would be saved by withdrawing most of the air line bus services from Town, which would be justified by the more economic working of the suggested rail services with every possible convenience.

Yours faithfully,

J. V. A. KELLY

"RC" Poppet Valve Gear in the U.S.A.

Montrose, P. O. Far Hills,
New Jersey, U.S.A. February 28

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Inasmuch as the "RC" poppet valve gear made its debut on the former L.N.E.R., your readers might be intrigued to learn that this simple and efficient steam locomotive improvement finds belated (alas) recognition in this country.

In the January, 1949, issue of the periodical *Trains*, Pennsylvania Railroad T Class Locomotive No. 5500 is depicted with a rotary cam poppet valve gear, which students of locomotive developments will recognise instantly as the "RC" poppet valve gear, identical with the Delaware & Hudson Railroad application on locomotive No. 653. A further application of the "RC" poppet valve gear is reported in the same periodical as being made to T-Class engine 5517. As all the 52 T-Class engines of the Pennsylvania Railroad originally were equipped with the Woodard-Franklin type poppet valve gear, the decision of the Pennsylvania Railroad authorities to remove this mechanism and to apply the "RC" poppet valve gear instead is significant. This step was taken after comparing operating results in severe service over a period of several years, of the "RC" poppet valve equipped K-4-S locomotive 3847, which is likewise equipped with the D. & H. style of "RC" poppet valve gear.

In the November, 1948, issue of *Railroad Magazine*, a Mr. M. H. Roberts, formerly vice-president for many years in charge of engineering of a leading locomotive accessories supply firm, states that following extensive observations made on D. & H. locomotive No. 653, his choice for a modern

locomotive poppet valve gear suitable for American railroads would be the "RC" type. The recent applications of the "RC" poppet valve gear to five new Baldwin-built C. & O. 4-6-4 locomotives, as well as a trial application to a Santa Fe Railroad 4-8-4 locomotive will bear out the soundness of Mr. Roberts's judgment. It is unfortunate that U.S. steam locomotive developments had to be handicapped by the failure to incorporate the "RC" poppet valve gear and other improvements in steam locomotive designs.

No wonder the diesel-electric locomotive could progress the way it did on our railroads, as engineering decisions in this type of motive power were left in the hands of engineers.

Yours faithfully,

RUSSELL BARTHOLOMEW

The Herne Hill-Tulse Hill Spur

New Malden,
Surrey, March 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your correspondent, Mr. C. J. Mantle, in his letter published in your issue of March 18, is at fault in his reference to this line. The L.S.W.R. advanced money for the "Metropolitan Extension" of the L.C.D.R. from Herne Hill to Ludgate Hill, over which in return it received running powers. So that the L.S.W.R. could establish a through Wimbledon-Ludgate Hill service, the L.C.D.R., at the cost, I believe, of the L.S.W.R., formed a connection between Tulse Hill and Herne Hill, and the through service began on January 1, 1869. The L.S.W.R. always provided the stock, and, so far as I am aware, no L.C.D.R. train ever regularly traversed the spur.

Yours faithfully,

SOUTH WESTERN

Advertising Railway Facilities

52, St. Georges Square,
Westminster, S.W.1. March 5

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—It is a long time ago now—possibly in the 1920s—and I was in one of the poorest suburbs of South London. Plastered on the wall of a building was an enormous poster which said: "For your grouse shooting travel to Scotland by the ——— Railway."

I cannot recall at this time whether it was the L.M.S.R. or the L.N.E.R.

I have never forgotten that poster. It seemed a perfect example of the fact that the railways had no advertising sense whatever. Have they any advertising sense today? Advertising means telling the public about the goods you have to sell. In the case of the railways it is seats in trains, in all trains, not only those running to romantic beauty spots, but seats in local trains and trains on branch lines, which are running often three parts empty.

Let me give some examples of what I mean. When I go down the approach to Liverpool Street Station I notice a coloured poster which says, rather irrelevantly to my mind, "New Zealand for Fishing." But nowhere do I see any announcement of the fact that there is quite a good service of trains throughout the day to Enfield and that these trains run at fairly regular intervals. There are a number of trains that run from Victoria to East Croydon in 15 minutes. Now this is very good service and worth the high fare on the railway. But there is no prominent announcement of the fact, nor any prominently displayed list of the fast trains.

Not long ago I happened to be near West Croydon Station. Now to reach the station from the road involves a considerable climb. There was, it is true, an enamelled plate which said "Frequent trains to London," but this might mean anything. What I wanted was a list of the times of the trains. Should I waste my time walking up the stairs to the station or should I take a bus?

Last year I was staying at Rye. There is quite a good service of trains to Hastings, many of them, if I remember rightly, at cheap fares. There were bus timetables displayed all over the town, but the only mention of railway trains was at the station itself.

How rarely does one see a sign post saying "To the Railway Station." I suggest that wherever there is regular service of trains, this fact, and the times at which they leave and how long they take to reach the principal town they serve, should be displayed at various points within reasonable reach of the station. Travelling by train is usually much quicker than by bus; this fact might be advertised as being some justification for the higher fares.

I know nothing about the cost of railway working, but I cannot help feeling that services on branch lines at regular intervals and properly advertised, might justify their continued

existence. In this connection I am puzzled, as a mere layman, why the bus companies usually run normal weekday services on Sunday, while the railways only too often do not run any trains at all. After all, Sunday is the day on which most people are prepared to travel, and people today travel for pleasure, and not merely for business.

I often wonder whether those in charge of our railways have ever heard of the existence of buses. Do they live in the past when the only competitors of the railways were stage coaches and horse buses? A small point, but not without its significance, is to be seen on the recently-issued map of British Railways. Here you will find marked a railway from Buckie to Keith in Scotland. When I saw this railway last June all the bridges had fallen down and the cuttings were becoming small forests. I believe the line was dismantled about 1914, and I think that by 1949 the news of its demolition might have filtered through to London.

Yours faithfully,
CLAUDE SISLEY

Professional & Technical Staff

Eastleigh, Hants. March 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I am glad to see the letter from "Branch Secretary" in your issue of March 18.

I realise only too well, of course, that I am not standing alone, but judging from the response to the opening provided by you in giving valuable space in these columns for the airing of our grievances, we are still a very small band.

"Branch Secretary" hits the nail on the head when he points out that we are so absorbed in the job that we do not take the trouble to point out our poor conditions to all and sundry, but if the only way to get a better reward for our labours is to shout a little louder then let us do so, quiet though we may be by nature.

The agreement recently concluded between the R.C.A. and the Railway Executive is not only evidence that there is no intention to reward engineers properly, but also proof that the R.C.A. cannot put our case forward with conviction.

The unpleasant fact that so many young men are leaving the railway service is proof that they are not getting the right treatment. To lose so much money at the beginning of their career is too much for them to bear quietly, so a few shouts from a few more should help considerably.

From the point of view of the Railway Executive it is a bad policy to pay young men so poorly, as it gives the Chief Draughtsman little control over his staff. The good ones will not stay and the bad ones go back to the shops and get a £2 rise!

Yours faithfully,
OLD ASHFORDIAN

Passenger Fares

Rustington, Sussex. March 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—If the only problem was to get the "ravelling public" back on to the railways, the proposals made in your March 18 issue by your correspondent, Mr. J. M. Pike, possibly might be effective, but only at the expense of the bus companies and London Transport, all owned or shortly to be owned by the B.T.C. As his proposed level for third class fares is only very slightly in excess of 1d. per mile (with return tickets at 1d. per mile, probably not more than 10 per cent. of the journeys would be made at the single fare rate of 1½d. per mile) many bus and tube fares would have actually to be lowered if "standardised" with these railway fares, with a resultant catastrophic fall in the passenger revenue of the Commission as a whole.

How then does Mr. Pike suggest that the undertakings of the Commission should be made self-supporting—by increasing season ticket rates or freight rates by both rail and road? Or is he one of those who think that under nationalisation such enormous savings in expenses will be effected that the loss of millions of pounds in receipts can be regarded with equanimity? By all means "standardise" railway and bus fares where similar services are provided, but at a level which will cover expenses, including interest charges on British Transport Stock.

Mr. Pike's calculation on the question of privilege tickets is a bit off the road. At the present level of fares, the charge for third class privilege tickets is 0.6d. per mile or 40 per cent. below his suggested rate for third return tickets, so that if "privilege" tickets were dispensed with, those at present entitled to them would have their travel charges increased by 66½ per cent.

Yours faithfully,
J. H. LAUNDRY

The "Franco Crosti" Locomotive Boiler

4, Temple Fortune Court,
London, N.W.11. March 14

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I am glad to be able to inform you that the Italian State Railways have decided now to adopt the above boiler as a standard and that they will rebuild five hundred of their locomotives as they pass through the shops for general repair.

The "Franco Crosti" boiler, as fitted to five 2-6-2 (685 class) locomotives in 1940, was described fully in your issue of December 27, 1947. A further five 2-8-0 (740 class) locomotives were rebuilt with the boiler in 1942. These prototype locomotives have been showing a fuel consumption economy of 18 per cent. over unrebuilt locomotives of the same class, while their maintenance costs have risen only slightly. As the result of experience gained, certain detail improvements will be incorporated in the new boilers, and as a result the cost of maintaining them will be no greater than that of a boiler of orthodox construction.

The five hundred locomotives to be rebuilt will be of the 2-6-2 (685 class), 2-6-0 (625 class), and 2-8-0 (740 class) types, and the work will be carried out by three firms, Ansaldo, of Genoa, Odero-Terni-Orlando, of Genoa, and Navalmeccanica, of Naples. The work of rebuilding each boiler, it is expected, will cost six million lire. However, each locomotive consumes yearly, on the average, 600 tons of coal at 13,000 lire per ton. If an 18 per cent. saving in coal consumption is shown, this means that the yearly fuel bill will show a decrease of 1,400,000 lire, and the first cost of the "Franco-Crosti" boiler will be recovered in little more than four years.

At the official exchange rate of 2,328.83 lire to the pound, these figures work out as follows. First cost of rebuilding a boiler, £2,572 2s. Coal, £5 11s. 8d. per ton. Cost of fuel saved yearly, £645 3s.

Yours faithfully,
P. M. BISHOP
British Empire Agent,
S.A. Locomotive a Vapore Franco

Efficient Braking of High-Speed Trains

London Transport Executive,
Acton Works, Bollo Lane,
Acton, London, W.3. March 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—You published in your issue of March 11 a letter from "Technical Assistant" on the braking of high-speed trains, in which the writer refers to results obtained on London Transport and extrapolates these to speeds of 100 m.p.h.

I feel it is proper to say that it would be inadvisable, without considerable experiment and trial, to count on the validity of such an extrapolation, as a number of factors may become of relatively greater importance at speeds in excess of 60 m.p.h. than they are below. For instance, braking at a fixed rate involves a dissipation of energy at a much greater rate in the higher ranges of speed than in the lower. Difficulties may arise from too high a rate of dissipation of energy, which may affect adversely either the brake block or the wheel tyre and might involve the need to diminish the rate of braking at the higher speeds in order to avoid trouble. If this were done, the percentage rate of braking over the whole stop would be reduced below the figure of 10 per cent. quoted.

It is not to be assumed, however, that these difficulties are insuperable, but work would be required on the problem. In any case, the stopping distance available should not be limited to a pre-calculated stopping distance, but should contain some margin for contingencies. The reference to higher rates of acceleration for the class of train referred to appears to be irrelevant to the journey time. The main problem is the track occupation in relation to safety of working, i.e., braking rate.

Yours faithfully,
W. S. GRAFF-BAKER
Chief Mechanical Engineer (Railways)

HARDWOODS DECONTROLLED.—Among the materials decontrolled by the President of the Board of Trade on March 22 were: hardwoods (except teak, Honduras mahogany, and ash); most types of leather; paper; a number of paint materials; and cloth for industrial uses. About a dozen species of hardwood are still scarce and most of them cost dollars. These woods, which account for 10 to 15 per cent. of total usage, will remain subject to licensing. Hardwood will continue to pass through Government stocks and the Timber Control will exercise discretion in selling their stock by paying special attention, in the case of the better grades, to the use for which the buyer seeks to acquire them.

The Scrap Heap

NEXT NATIONALISED INDUSTRY

The Government intend to nationalise crime. Why? Because then it won't pay.

As an up freight train was passing Taplow at 6.30 a.m. on March 17, the signalman noticed two men riding in a wagon. An advice was sent to the next station, Slough, where the train was stopped and the men detained by the platform staff until taken into custody by the police. It was found they were in possession of tools and clothing apparently taken from railway premises at Reading.

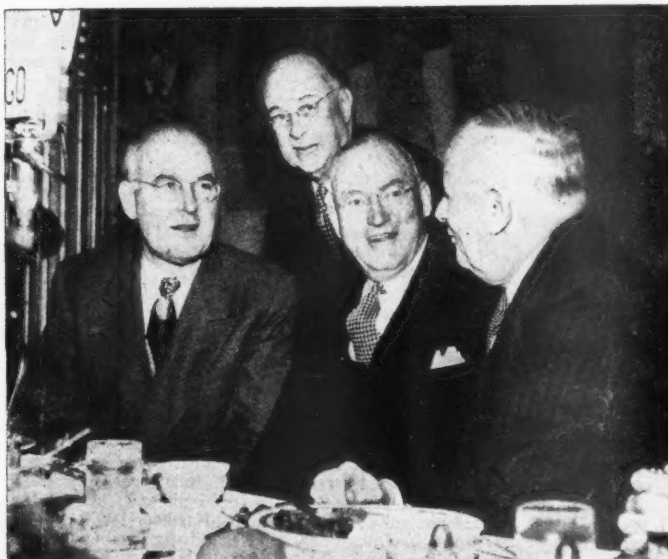
Marylebone Station, the London terminus of the Great Central Railway, was destined to be the last main-line station ever to be built in London, just as the Great Central itself was to be the last trunk railway to be built in Britain. The 5.15 a.m. of March 15, 1899, signalled the climax of a great railway era.

When Victoria ascended the throne in 1837, there was not a major railway terminus in the capital. Euston, Liverpool Street, Paddington, Kings Cross, Victoria, Waterloo—she saw them all go up. Marylebone was the last. And two years later she was gone.—*Harold Walton in "The Evening News."*

AMERICAN RAILROAD PRESIDENTS

A meeting of the American Association of Railroads in San Francisco brought more railroad presidents together under one roof than San Francisco has ever seen before. Sponsored by the San Francisco Chamber of Commerce, guests at a luncheon included 15 railroad presidents, several of whom are seen in the photograph reproduced below. They are, from left to right: Mr. W. T. Faricy, President, Association of American Railroads; Mr. A. T. Mercier, President, Southern Pacific; Mr. H. E. North, President of the Chamber, and Mr. Harry A. Mitchell, President, Western Pacific.

"Shades of the Big Four"



American railroad presidents at San Francisco (see paragraph above)

Photo

"The Argonaut"

BATH PLUG PILFERING

Some time ago I visited one of the railway hostels at Carlisle and was very much impressed with the bathroom facilities, and then I happened to look down and saw that none of the baths had a plug, and so could not be used because of the petty pilfering of the plugs which rendered them useless.—*Mr. Alfred Barnes, Minister of Transport, speaking at the opening of the Old Oak Common Hostel & Canteen, Western Region.*

B.R. AID HOTELS—AT A PRICE

Allegations that British Railways offered to help hotels to get bookings if they were given a commission were made at a Porthcawl (Glam.) Chamber of Trade meeting recently.

The President read a letter from the manager of an hotel and restaurant firm, saying: "A week ago I had a visit from the stationmaster and he handed me a questionnaire.

"To the last question: 'What commission is the caterer prepared to pay the railway for recommending parties?' I answered 'None.'

"I can understand a small private bus company asking for this, but it seems wrong for a Government concern to do so."—*From the "Graphic."*

Mr. Harold Macmillan, M.P., told a Newport, Mon., meeting that it was no use Conservatives trying to revive the old individualism. Certain activities, such as the Post Office, gas, water, electricity, and the like, were suitable for national ownership and control. Coal and transport were more dangerous ground.

He did not think either the mines or the railways could be restored to private ownership, though road transport should. The cure in railways and coal was not to change the ownership but the system of management.

"The industries must not only be nationalised but humanised," said Mr. Macmillan. "Under nationalisation they are becoming rapidly bureaucratised."—*From the "Evening Standard."*

100 YEARS AGO

From THE RAILWAY TIMES, March 24, 1849

MIDLAND RAILWAY.

SHAREHOLDERS MEETING AT LIVERPOOL.

On Wednesday, a meeting of the shareholders of the Midland Counties Railway was held in the Clarendon Rooms, Liverpool, for the purpose of collecting the opinions of the proprietors generally as to the present position and prospects of the Company, and to take such measures as may be necessary to institute a strict and searching inquiry into the affairs of the Company, generally. There was a fair attendance of the proprietors resident in this locality. A. H. WYLLIE, Esq., occupied the chair.

The CHAIRMAN, in moving the first resolution, stated that they were all aware that at the meeting held at Derby a Committee of inquiry had been called for, in order that the affairs of the Company might be investigated, but was not granted by the Directors. He (Mr. W.) was the person who moved for the appointment of that Committee, and he did so on two grounds. One of those grounds was, that the accounts, as presented to the shareholders at the last general meeting, seemed to him to be in such a state as to give no satisfactory explanation of the affairs of the Company. He did it, too, on the ground that, by the course the Directors had for some time pursued, the parent property of the Company was being wasted and lost. Those were the two grounds on which he had moved for the appointment of a Select Committee, and, without assigning any reason, the Directors had refused to grant it. After condemning the refusal of the Directors to grant the Committee of Inquiry, Mr. W. referred to the Committee of Inquiry now sitting at York to investigate certain charges preferred against Mr. Hudson. He said that every line with which Mr. Hudson was connected was now suffering by his management. He (Mr. W.) was not going to

prejudice what the decision of that Committee would be, but this far he would say, that in that Committee Mr. Hudson must either have his character vindicated, or remain for ever a dishonoured man. As far as the Midland Railway was concerned, he felt convinced that, if they had any regard for the value of their property, all the shareholders must feel anxious for the removal of Mr. Hudson from the Chairmanship of the Board of Directors. They had an instance of his conduct on a recent occasion in the Eastern Counties Railway, where he refused to come forward at the meeting when his presence was most required. Mr. W. then proceeded to comment on the course which Mr. Hudson had pursued in supporting the interests of the Great Northern Railway whilst Chairman of the Midland. At the very moment when he was acting as Chairman of the Midland Railway, he entered into an arrangement with the Great Northern, which was the most active rival the Midland Company had.

EN PASSANT

Castles and mansions crumble,
The stately homes decay,
The little wayside Edens
Are Britain's pride today.

For here is truth unshaded,
Back gardens cannot hide
The bare bones of a nation,
Her suffering, her pride.

Some are, alas, dejected,
But most are brave and gay,
Flaunting their cheerful courage
On every washing day.

Here is a little orchard,
There cabbages hold sway;
A summer house, a duck pond,
A place where kids may play.

Flowers fringe the homely pathways
That straggle through the grass
And friendly hands are waving
From windows as we pass.

The very heart of Britain
Beats in these wayside shrines,
In tiny homes and gardens
Beside the railway lines.

A. B.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

UNITED STATES

Railways Fight Record Snowfall

Towards the end of November, 1948, heavy snow and sleet storms occurred in the Central Western States. In December and January more storms followed over a greater area. From then until mid-February intensive blizzards hit the Central Western, Mountain, and North-Western States. Winds of up to 60 m.p.h. caused ground blizzards which undid much snow clearance on the railways.

All available railway equipment and personnel were sent to the affected areas. The usual snow-clearing ploughs were augmented by bulldozers.

CANADA

Fare Increases

One-way adult railway passenger fares have been increased from a minimum of 5 cents to a minimum of 10 cents. The increase was approved by the Board of Transport Commissioners for Canada and, effective from February 20, applies to all railways throughout Canada. An upward

creases, had prevented the carriers from raising sub-ceiling rates on specific commodities. In the earlier case, it suspended freight-rate increases on farm implements moving from Eastern to Western Canada.

The intended new fish rates would have applied chiefly to fresh and frozen products. The Fisheries Council and the Maritime Transportation Commission contended that the increases would have the effect of sending up consumer costs between two and five cents a pound in Ontario and Quebec, and that not only would the fish industry be hit, but fish shipments would fall off and the railways thereby would lose revenue. The railways replied that the claim concerning retail price increases was exaggerated. They said that the increases ranged from a small fraction of 1 cent to about 2½ cents a pound and that most of them were under a cent.

New Line in Quebec

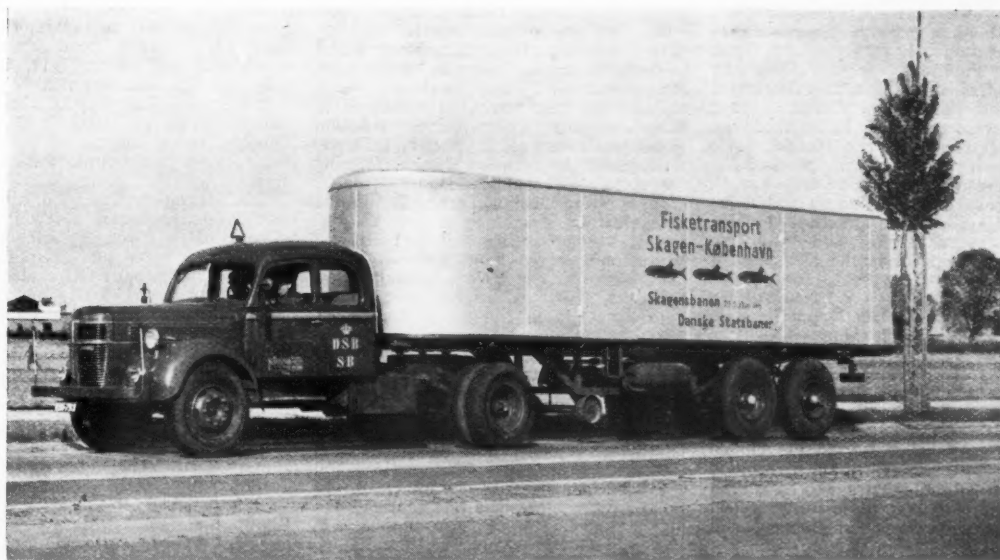
The incorporation of the Romaine River Railway Company, to build at a cost of \$3,000,000 a 27-mile railway line from Havre St. Pierre, on the Lower

a tunnel leaving the main line 2 km. from Caballito, just before Once terminus. It runs beneath the ex-Anglo-Argentine underground for most of its length of 5½ km. A new halt, named Primero de Marzo (March 1), after the date of transfer of the railways to State ownership, has been constructed at the eastern end of the tunnel in the port zone. There are 14 trains daily each way, taking some 16 min. on the journey between 1 de Marzo and Caballito. A shuttle service with a three-coach electric train—two first class and one second class—is given, and the single fare is 30 centavos first class and 20 centavos second class. The service is experimental at present and will be augmented if traffic warrants.

DENMARK

Lorries for Fish Transport

In co-operation with the Skagensbanen private railway, the State Railways have begun a lorry service from the Skaw to Copenhagen for the transport of fresh fish, as it has proved difficult to provide a satisfactory railway service for this traffic. The route is by way of Grenaa and Hundested, between which points a private ferry service is used. Lorries leave the Skaw at 4 p.m., arrive in Copenhagen at 6 a.m., leave again at 2 p.m. and reach



Lorry for fish transport jointly operated by the Danish State Railways and the Skagen Railway

adjustment will be made at the same time in certain depressed rates now in effect for season ticket traffic and the minimum charge for 50-trip monthly tickets will be \$3-75.

Suspension of Higher Rates for Fish Traffic

An attempt by the Canadian railways to increase express rates on fish has been rejected by the Board of Transport Commissioners, which issued an order suspending the proposed higher rates, which were to have gone into effect on February 14, after receiving protests from the Fisheries Council of Canada and the Maritime Transportation Commission.

It was the second time in two months that the board, now engaged in hearing a railway application for general rate in-

North Shore of the St. Lawrence River, inland to Allard Lake in Saguenay county where valuable titanium deposits have been found, is the primary object of a private Bill adopted by the Quebec Assembly on February 17.

ARGENTINA

Passenger Service Over Port Branch

An electric passenger train service has been introduced between Caballito Station on the Domingo Faustino Sarmiento Railway (ex-B.A.W.R.) and the Port of Buenos Aires, through the tunnel which was built in 1912 to give the Buenos Aires Western Railway access to the port zone. Since then only electrically-hauled goods and cattle trains have regularly used the branch, which is single-track and enters

the Skaw at 4 a.m. They have four axles and consist of the engine unit with a 100-h.p. 6-cyl. Volvo diesel engine, and semi-trailer, of about 10 tons capacity, ventilated and with electric light.

JUGOSLAVIA

New Railway in Macedonia

A standard-gauge line, 34 miles long, is being built in northern Macedonia between Kumanovo and Ovce Polje. Kumanovo is on the Belgrade-Skopje-Salonika main line, 23½ miles north of Skopje, the capital of Macedonia, and 257 miles from Belgrade. Ovce Polje is on the standard-gauge line branching off at Titov Veles (30½ miles south of Skopje) from the Skopje-Salonika line and leading through the Bregalnica valley to Kot-

chani, in the direction of the Bulgarian frontier. The distance between Ovce Polje and Titov Veles is 22.3 miles.

The new railway will act as a relief for the Kumanovo—Skopje—Titov Veles section of the above mentioned main line, paralleling it roughly 20 miles to the east, and constitute a further link in the expansion of the local railway system towards the south. Kumanovo was intended during the occupation between 1941 and 1944 as the junction between the Belgrade—Skopje main line and the railway then building from Guechevo (the Bulgarian terminus of the standard-gauge line from Sofia via Küstendil) westwards via Kriva Planka. The region to be traversed is mountainous.

GREECE

Possible Takeover of the Compagnie Franco-Hellénique

Negotiations concerning the future of the Compagnie Franco-Hellénique de Chemins de Fer, begun some time ago, are reported to be nearing conclusion, and it is believed that the Hellenic State Railways will take over the system owned by that company in north-eastern Greece. The problem has been linked with that

of the final settlement of the debts due to the company by the State.

After the liberation the Greek Government took over the company's system on April 18, 1945, and restored it to the company on November 1, 1946. The system, standard gauge throughout, is 115 route-miles long and consists of two lines, Alexandropolis—Pithion, 70 miles, and Pithion—Svilengrad, 45 miles. The latter crosses into Turkey just north of Pithion, forming a connection with the Turkish lines at Edirne (Adrianople), 22 miles from Pithion, whence it leads north-westwards into Greek territory again and on to Svilengrad, the Bulgarian frontier station, 23 miles from Edirne.

At Pithion, the Turkish State Railways connect with the company's system; Uzunköprü, their frontier station on the line for Istanbul is 11 miles from Pithion. The Svilengrad—Edirne—Pithion—Uzunköprü section is of particular importance as a link in the Calais—Istanbul route of the "Simplon Express." At various periods since the war up to the summer of 1948, passengers of the "Simplon Express," both eastbound and westbound, were conveyed by buses between Svilengrad and Uzunköprü because of possible insurgent attacks on the train in Greek

territory. The bus route runs entirely through Turkish territory.

Alexandropolis, the southernmost point of the company's system, is the eastern terminus of the main line from Salonica, 276 miles distant, and part of the Hellenic State Railways. Trains from Salonica are worked through to Pithion. The company owns 8 locomotives, 2 diesel railcars, 18 coaches, and 209 wagons.

FRANCE

Internationalisation of Hendaye and Irún Frontier Stations

Negotiations between the French and Spanish National Railways are reported to be in progress for a scheme of internationalisation of the frontier stations of Hendaye and Irún on the Paris—Bordeaux—Madrid route. The stations are 6,560 ft. apart. Hendaye is 506½ miles from Paris and Irún 396½ miles from Madrid. The standard gauge and the Spanish broad gauge are laid between the two stations, and under present arrangements French trains cross into Spain at Irún, and Spanish trains work to and from the French frontier station of Hendaye.

Publications Received

Oxygen Cutting: A comprehensive study of modern practice in manual and machine cutting. By E. Seymour Semper. London: Published for *Welding* by the Louis Cassier Co. Ltd., and distributed by Iliffe & Sons Ltd., Dorset House, Stamford Street, S.E.1. 8½ in. x 5½ in. 150 pp. Illustrated. Price 10s. 6d.—This compendium of modern practice in manual and machine cutting with oxygen should prove of great interest and value to all engaged in the practical application of oxygen cutting and also for students and trainees in the technique of welding.

The book, which is based on a series of 16 articles recently published in the monthly journal *Welding*, is claimed to be the first on the subject published in the United Kingdom. There are 99 photographs and diagrams of oxygen cutting operations and an interesting though brief reference to the electronic control of profile cutting recently in the United States. It is ironical that the first recorded use of oxygen cutting is said to have been made by burglars who successfully opened a safe in a North London post office in 1906.

Great Western Suburban Services. By Thomas B. Peacock. Halstead, Essex: Published by the Author at 30, High Street, 9 in. x 5½ in. 51 pp. Illustrated. Price 15s.—Although the Great Western did not develop its suburban services as much as its riverine rival, the London & South Western, which as early as 1860 had gained a firm footing in the lower Thames Valley, it gradually built up substantial local traffic based on the main line, with short branches tapping important towns like Windsor, Uxbridge, and Brentford.

It secured also what the South Western lacked—access to the heart of the City. By arrangement with the Metropolitan, to which it had contributed £175,000 of the capital, its trains were the first to penetrate the tunnels between Bishops Road and Farringdon Street, and to Daniel Gooch went the honour of design-

ing the first "underground" locomotives, the 2-4-0 "tunnel engines" which inaugurated this service on January 10, 1863.

The opening of the District Railway gave the Great Western another useful intramural route, and its Farringdon Street—Bishops Road service, which already had been extended eastwards to Moorgate and westwards to Addison Road, was prolonged in August, 1872, via Earls Court to Mansion House, forming the so-called "Middle Circle."

In 1879 the District reached Ealing and unsuccessfully sought to extend to Uxbridge. As a *solatium* it was allowed to put on a service from Mansion House to Windsor, over G.W.R. metals from Ealing, a daring experiment which lasted only from March 1, 1883, to September, 1885.

A great change came with the opening of the finely-engineered Acton & Wycombe line (promoted in 1897 to counter a District-backed project for a Harrow-Wycombe line) forming part of a new Great Western route to Birmingham. Rail motors and halts were provided and great efforts were made to encourage building along the new line in the Brent Valley, but development was slow at first.

An interesting scheme, which failed to materialise in connection with the Ealing & Shepherds Bush Railway, authorised in 1905, was for a suburban terminus at Shepherds Bush, affording interchange with the Central London tube, but on August 30, 1920, the tube trains themselves were extended through to Ealing. The recent further extension of Central Line tube trains to Ruislip is an indication of the great change which has come about with the spread of industry and building in this once-rural part of Middlesex.

Without bringing out a comprehensive suburban electrification plan of its own, the Great Western was early in the electric traction field, for in 1906 it electrified with the Metropolitan the joint Hammer-smith & City line, for which it built a large power station at Park Royal.

Up to 1915 Great Western trains ran over the West London and West London Extension Railways into Victoria where the "Chatham" side of the station was

shared with the S.E.C.R. by virtue of powers granted in 1859. The most interesting of the Great Western services from Victoria was an express to Birmingham via Addison Road and Bicester, which was put on in 1911, but lasted only through that summer.

There is a clear map of the suburban area extending westwards to Denham and Langley, and a diagram of the track layout between Westbourne Park and Paddington.

The illustrations are good, although we should have welcomed a few illustrations of some of the older stations, such as Uxbridge Vine Street, and also of the most important suburban interchange station, Ealing Broadway. With the author we hope that this work will encourage others to record the development of other London suburban services.

Bulletin of the International Railway Congress Association. Published in French and English at 19, Rue du Beau-Site, Brussels.—The February, 1949, issue contains an exhaustive report on the "Recovery and Strengthening of Metal Bridges that have Reached the Theoretical Limit of Safety," setting out the policies and practices favoured in various countries. Two of the more unusual features of this report are referred to in an editorial on page 313. Other subjects dealt with in the February *Bulletin* are: (1) the "New Flat Wagons on the Swiss Federal Railways," the description of which is quoted from the September 10, 1948, issue of *The Railway Gazette*; (2) "Official Information Issued by the Permanent Commission" of the association; (3) a directory of the members of that commission; and (4) reviews of new books and publications, including (a) "The Universal Directory of Railway Officials and Railway Year Book, 1948-49," (b) "The Reconstruction of the Italian State Railways" (in Italian); and (c) "The Management of the Railways in the Occupied Territory, 1923-24" (in French). There is also the usual monthly bibliography of railways, arranged according to language, and in two parts: (i) "Books" and (ii) "Periodicals."

Track Drainage at Water-Troughs in America

Details of recently-installed track drainage systems at multiple water-troughs on New York Central high-speed main line

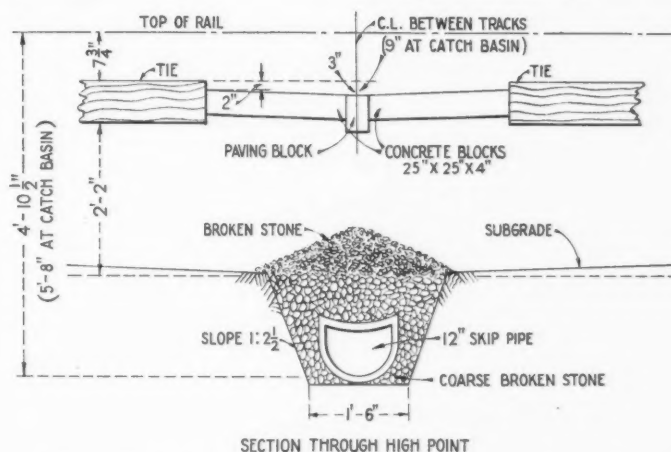


General view of quadruple troughs showing entire covering of formation by slab saucer drains except actual tracks

TO dispose effectively of the large volume of water overflowing from water-troughs and splashed over the track and formation, extensive drainage measures have been undertaken by the New York Central System administration during the past four years. The troughs concerned are all on the multiple-track high-speed main line between Buffalo and Chicago, and are at five different points; at four of them there are four tracks each provided with a trough. Water is taken by locomotives running at speeds up to 80 m.p.h. The measures taken at each set of troughs were very similar, as described below.

Sub-Surface Drainage

Longitudinal trenches were first dug between the tracks throughout the full length of the troughs. A special type of vitrified earthenware spigot and socket pipe, in 2-ft. lengths, then was laid in the troughs and its U-shape section and dished top can be seen in one of the illustrations on this page. Catch basins or sumps are placed at 160-ft. intervals in each drain, which is sloped from central, intermediate high points down towards each sump. The internal bottom level of the pipe is 4 ft. 10½ in. below rail level at the high central points, and is graded down to 5 ft. 8 in. below rail level, at each sump, giving a 9½-in. fall in each 80-ft. length or approximately 1 in 100. After the piping had been laid to grade, the trench was back-filled with coarse broken stone up to formation level, and with broken stone



Cross-section of surface saucer drain and sub-surface pipe drain running longitudinally between tracks

ballast above it. To provide openings for admitting water to the pipe and to exclude cinders and dirt that might work through the stone filling round it, as well as minimising the danger of the openings being clogged, the pipes are specially designed. In each length of pipe, the under side of the dished or cradle top at the socket end is cham-

fered off at 45 deg., also, the upper side of the top at the spigot end has the same angle of bevel. To ensure admission to the pipe of any water collecting on the cradle, an arrangement of lugs at the socket end of each length, provides a transverse slot in the cradle at each joint. The water, guided by the chamfering, thus enters the pipe in the direction of flow.

Surface Protection and Drainage

At track ballast level, a shallow saucer surface drain also is provided immediately over the pipe drain just described. This is formed with two lines of concrete slabs, each 25 in. square and 4 in. thick, butting up against the sleeper ends and sloping transversely down to a central paving block on edge. There also is a longitudinal slope on these saucer drains from the high points down to the sumps, the gradient being about 1 in 150. The slabs and paving blocks are laid with open joints. Similar saucer drains are provided to cover the shoulders of the formation, which, therefore, is covered entirely with slabs except at the tracks. Water splashed from the troughs thus finds its way to the sumps, either along the surface of the saucer drains, or by percolation. This percolation is through the surface track ballast, or through the open joints between the slabs, to the lower ballast and so through the broken stone filling and the pipe line. Transverse 12-in. pipes carry it away from the sumps clear of the line.

THE RAILWAYS OF SOUTH WALES.—A fascinating blend of geography, industrial development, and railway history was presented to members of the Railway Club on March 18, when the railways of South Wales were described by Mr. D. S. M. Barrie, M.B.E., Public Relations Officer, the Railway Executive. The review embraced the South Wales coalfield, which extends from the River Usk, in the east, to Llanelli, in the west, and about 25

miles inland from the Bristol Channel. The country is mountainous, with deep river valleys running down to the sea, and its railways are remarkable for their heavy engineering works. The development of the iron ore deposits, towards the end of the eighteenth century, resulted in the construction of many tramroads, one of which, the Penydarran, was the scene of Trevithick's famous locomotive trials, in 1804. The subsequent growth of the col-

liery industry led to the construction of a complex railway system, owned by three English companies—the G.W.R., the L.N.W.R., and the Midland Railway—and 12 local undertakings. The local railways were absorbed by the G.W.R. in 1923, but not before intense rivalry between them had resulted in a great deal of uneconomic competition, and also the provision of alternative routes to the sea ports.

Control Equipment for London Suburban Trains

Varieties of contactor operation for resistance control and application of metadyne system in London area services

A DESCRIPTION of the control equipment used on most types of electric trains operating in the London suburban area was given in a paper entitled "Railway Traction Control Equipment on Suburban London Transport" and presented to the Institution of Electrical Engineers, on February 17, by Mr. E. Webster, B.Sc.(Eng.), of the London Transport Executive.

Analysing the systems in use, the author showed that nearly all employed series-parallel control of two motors, with bridge transition. Contactor equipment for this form of control fell into four main groups, as follows:—

1. Electromagnetic contactors with hand control of acceleration.
2. Electromagnetic contactors with hand or automatic control of acceleration at the choice of the motorman.
3. Electromagnetic contactors with automatic control of acceleration.
4. Electro-pneumatic contactors with automatic control of acceleration.

Another form of contactor control was found in a large group of London Transport stock, namely, an electro-pneumatic camshaft system which cut out resistance by means of cam-operated contactors, first with the motors in series and then, by reversing the rotation of the camshaft, with motors in parallel. Another interesting development in certain London Transport stock was the metadyne control system which gave notchless acceleration and an ingenious combination of regenerative and air braking.

Southern and L.M.R. Practice

Dealing in turn with the various electrified lines in the London area, the author first described the control equipment of Southern Region suburban stock. Motor coaches placed in service from 1915 to 1935 had electromagnetic contactors operated direct from the 660-V. traction supply.

In 1932 electro-pneumatic contactors working at 70 V. were introduced in the new main-line stock, and it was decided, later, to standardise this system for suburban vehicles. The first suburban motor coaches with electro-pneumatic contactors entered service in 1937. A potentiometer system was used to provide the 70-V. control supply so that this stock could be used in multiple with electromagnetic equipments.

With both systems the master controller had four positions: (1) motors in series and all resistance in circuit; (2) automatic acceleration up to full series; (3) transition to parallel with all resistance in circuit; and (4) automatic acceleration to full parallel. The automatic accelerating sequence could be arrested at any stage by returning the controller to positions 1 or 3.

With both equipments the motorman had a rate switch which altered the setting of the accelerating relays and so governed the rate of acceleration.

Rolling stock of the L.M.R. electric services from Euston had the characteristics of either hand-controlled or automatic acceleration. When the former was in use, the master controller drum and its operating handle were locked together; but for automatic acceleration they moved independently, the drum being rotated

step by step by a ratchet device under the control of the accelerating relay, until it reached the position to which the controller handle had been moved. Electro-magnetic contactors operating at the line voltage of 650 V. were used.

Resistance was cut out in five steps with the motors in series and four steps after transition to parallel. In the oldest equipments the motors operated only with full field, but later types provided either one or two weak-field positions after reaching full parallel, the field adjustment being obtained by means of tappings.

Motor coaches with one weak-field setting had provision for cutting it out so that they could be worked in multiple with earlier stock; while those with two weak-field steps were equipped with a three-position switch which either restricted the motors to full-field operation, or selected whether one or both weak-field settings were used.

L.T.E. Contactor and Camshaft Systems

London Transport tube stock could be classified as pre-1938 equipments and those of the type introduced in 1938. The earlier stock had electromagnetic contactors operated at line voltage (650 V.). Some of the master controllers had four positions, similar to those of the Southern Region equipments described already, but those supplied by one maker had only three, namely, a shunting notch, automatic acceleration up to full series, and automatic acceleration up to full parallel.

A weak-field step in full parallel, obtained by means of a diverter resistance, was added to these equipments in 1934 to raise the maximum speed. A switch with a flag-type indicator was provided in most of the stock, so that the motorman could cut out the automatic progression to weak field when desired.

In 1938 London Transport introduced new trains in which all the control equipment was mounted on the underframe, instead of in the coach body, thus providing more passenger space. A conventional series-parallel control scheme was adopted, but the contactors were operated by a camshaft driven by an oil-air engine under the control of electro-pneumatic valves. Power for the control circuit was supplied at 50 V. from a motor-generator set floating across a 23-cell lead-acid battery.

Rotation of the camshaft in one direction eliminated resistance in nine steps with the motors in series, and at the tenth step energised the series-parallel transfer switch.

The camshaft then reversed and again cut out resistance in nine steps. At the tenth step, assuming the flag switch had been operated by the motorman, it weakened the motor fields by switching in a diverter resistance. A second weak-field step followed automatically under the control of a relay. The reverser handle had two "forward" positions, in the first of which, as in "reverse," the notching relay setting was reduced so as to give a lower rate of acceleration.

The author dealt briefly with London Transport surface stock having contactor control. This included hand-notched equipments, with nine resistance steps, in the 1920 District stock and a portion of the Circle stock. Contactors were operated

at line voltage except in the Metropolitan compartment stock, where a supply of about 100 V. was tapped off a potentiometer; and in Circle stock with automatic acceleration, where motor-generator sets gave a control supply at about 20 V.

Notchless Acceleration and Regeneration

In conclusion, the paper dealt in some detail with the metadyne surface stock introduced in 1937. All the control equipment was mounted on the underframe, and the three metadyne machines, assembled as one unit, were suspended on three rubber pads. Speed control was obtained by adjustment of the exciter fields, the three positions of the master controller providing: (1) low acceleration and low balancing speed; (2) maximum acceleration with low balancing speed; and (3) maximum acceleration with high balancing speed.

The brake handle had two regenerative notches. On the first notch a small amount of air as well as regenerative braking was applied to the motored axles, while on notch 2—the normal position—full regenerative braking was applied to the motored axles, and variable air braking could be used on the non-motored axles.

Before finally stopping, regeneration was cut out automatically and full air braking was applied to the motored axles.

Most of the contactors were electro-pneumatic, although electromagnetic operation was used for the small ones in the exciter field circuit. All were supplied at 50 V. from a motor generator.

Discussion

In the course of a discussion which covered many aspects of Mr. Webster's paper, Mr. C. M. Cock, Chief Electrical Engineer, Railway Executive, said that there was need for still more compact arrangements of control equipment on multiple-unit main-line trains to make room for other apparatus associated with various amenities for passengers. His acknowledgment of the reliability of control gear was borne out by Mr. E. H. Croft, General Electric Co. Ltd., who said that a controller which he had kept sealed for two years had not required any maintenance. Trouble with a certain relay had been stopped by sealing that up as well, which put an end to maintenance instead of necessitating an increase.

Mr. W. S. Graff-Baker, Chief Mechanical Engineer (Railways), London Transport Executive, reported that, whereas it had been estimated that metadyne equipment would just pay for itself by the saving in energy, a more favourable balance had, in fact, been realised owing to the increase in the price of coal. It was not practicable in ordinary railway and tramway service to regenerate large quantities of energy, however, because of the difficulty of getting it away to other trains, or even to a substation, and the problem of voltage rises.

Mr. F. D. Lester, British Thomson-Houston Co. Ltd., asked whether regeneration would save in brake maintenance unless all axles were motored, and mentioned that the latest equipments on the New York subway employed rheostatic braking.

Replying briefly to these and other speakers, Mr. Webster observed, in connection with regenerative braking, that difficulty was experienced already in dealing with the regeneration from the number of axles motored at the present time.

Southern Region Electric Locomotive No. 20003

The latest development of a class that meets the special service requirements of its region by many novel features of electrical design

ELECTRICAL operation on the former Southern Railway was confined until recent years to multiple-unit passenger trains made up of set formations suitable for the various services in which they operate. There are, however, many trains, such as boat trains and goods trains, which do not lend themselves to a set formation, and these are still operated largely by steam locomotives.

With the increasing electrified track mileage, there was a good case for the use of electric locomotives for such trains, and also possibly for trains running beyond the electrified area, or through trains from other railways. In view of this, the Southern Railway undertook the construction of two experimental locomotives (the first of which was described briefly in our January 23, 1942, issue), and after lengthy trials with them, a third locomotive, No. 20003, has been placed in service recently by the Southern Region, embodying the results of experience gained with the two earlier locomotives. (See our December 17, 1948, issue).

The general practice on the Southern Region is that goods trains are operated mainly at night, while during the day the railway is occupied principally with passenger traffic. Therefore, locomotives designed solely for goods train working might be unemployed for a large part of the 24 hours, and a locomotive designed solely for operating passenger trains might also be idle for a large, though different, part of the 24 hours. One of the most valuable assets of an electric locomotive is its ability to operate continuously over long periods of time, and in order to make full use of this availability, the present design has been evolved so as to be capable of operating the heaviest goods trains or express passenger trains with equal facility. To meet any special demands that may arise in the future, especially with heavy express passenger trains, provision has been made in the design for

two locomotives to be coupled together in multiple unit and run as one locomotive.

In a locomotive deriving power from a third rail, means must be found for maintaining tractive effort over the numerous gaps in the rail inevitable with such a system. Furthermore, the use of a conductor rail is impracticable in many sidings, and it seemed desirable to make provision for current collection from an overhead wire. All these considerations presented a difficult problem for solution in the matter of electrical design, and it will be seen from the following description that the requirements have been met successfully by methods not adopted hitherto so far as is known.

The locomotive has two 6-wheel bogies, carrying a box type body with a driving compartment at each end and a main equipment compartment between. In the middle of the main equipment compartment there is a train heating electric boiler with feed water tank below. This is completely partitioned off, so that no escape of water or steam can enter the equipment compartment. Each axle carries a nose-suspended motor, geared to the axle by straight spur gearing.

Three sections of the roof have been made removable to enable the larger pieces of equipment to be lowered into or raised from the body by overhead crane; and sections of the body plating are secured by bolts instead of rivets, so as to give access to the backs of switchboards. The boiler compartment is provided with double doors in the side of the locomotive, through which either single elements or the complete boiler can be withdrawn. Other doors opening into the interior of the equipment compartment afford means of inspection while running.

Large entries are provided just above the cantrail over the booster sets to admit cooling air for the boosters and traction motors. The air for the booster sets

enters the interior of the equipment compartment through removable brush-type filters. Traction motor cooling air is not filtered, but is ducted from the roof intakes direct to the blowers on the booster set shafts and thence to the traction motors. Dimensions and other particulars of the locomotive are given in Fig. 1 and in the table below:—

Nominal supply voltage ...	660 d.c.
Type of service ...	Mixed-traffic
Wheel arrangement ...	Co-Co
Total weight ...	105 tons
Wheel diameter ...	42 in. nominal
Type of brakes ...	Air on locomotive; vacuum on stock
Maximum service speed ...	75 m.p.h.
Balancing speed ...	66 m.p.h. with 425-ton train
Gear ratio ...	3.83 : 1 (65 : 17)
Number of motors ...	6
Motor connections ...	3 in series
Traction motor voltage ...	400
Type of motor ...	Series-wound, pressure-ventilated
Number of field taps ...	1 (plus 2 stages of field diversion)
Volume of cooling air per motor ...	1,350 cu. ft. per min.
1-hr. rating of motors ...	245 h.p.
1-hr. rating of locomotive ...	1,470 h.p.
Tractive effort—	
Nominal maximum ...	45,000 lb.
1-hr. ...	19,500 lb. at 28.5 m.p.h.
Continuous ...	11,130 lb. at 35.5 m.p.h.
Control voltage ...	150
Control air pressure ...	70 lb. per sq. in.
Total number of running notches on controller ...	26
Rating of M.G. set ...	9 kW. at 150 volts
Battery ...	98 cell NiFe, 70 amp.-hr.
Air compressors—	
Number and type ...	2 Westinghouse D.H.25 horizontal
Capacity ...	25 cu. ft. per min.
Vacuum exhausters—	
Number ...	2
Type ...	Reavell, 5 in. by 7½ in.
Train heating boiler ...	380 kW. at 660 volts; 1,000 lb. steam per hr.
Collector shoe base ...	36 ft. 6 in.
Pantograph—	
Type ...	Spring-operated, double-pan
Pressure on wire ...	28 lb.
Min. working height ...	13 ft. 3½ in.
Max. working height ...	21 ft. 6 in.
Lubricant for pans ...	Grafalube
Supplier of electrical equipment ...	The English Electric Co. Ltd.
Builder of mechanical parts ...	Southern Region, Chief Mechanical Engineer's Department

The basic problem was to design a unit capable of accelerating at a reasonable rate and running economically at suitable

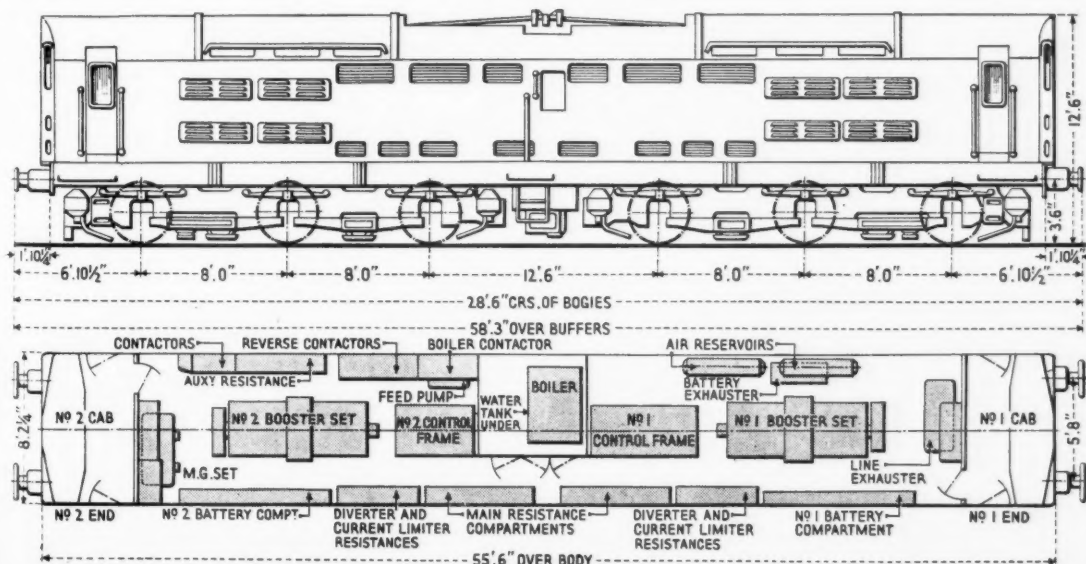


Fig. 1—Principal dimensions and interior arrangement of electric locomotive No. 20003

speeds when hauling both heavy unbraked goods trains and express passenger trains, while possessing adequate provision for hauling the heaviest trains over the longest gaps in the third rail. The solution adopted is the use of booster (motor generator) power units, and effecting control by varying the generator field cur-

switched out in the normal way for maintenance work, there would be a great risk of injury to the men working on the line. The circuit is therefore arranged so that the shoes remain dead unless they are in contact with a conductor rail which is energised from the source of supply, or unless the locomotive is taking its supply

from the pantograph. In the latter case the shoes may be isolated by a special main switch provided on one equipment frame.

At starting, the booster generator field is excited so that the booster generator supplies an E.M.F. slightly less than the line voltage, and opposing it. The excitation is so arranged that this condition always applies whatever the value of line voltage happens to be at the time. This condition is described as "booster generator bucking." Under bucking conditions the current flows through the generator in a direction opposing the E.M.F. generated by it. The booster generator, therefore, acts as a motor and delivers power to the shaft. The power is absorbed by the booster motor, which acts as a generator. In this condition the voltage across three traction motors in series = line volts - booster generator volts (see Fig. 2a).

On the middle notch of the controller the voltage across the booster generator terminals is zero, and the full line voltage is applied across the three traction motors in series (Fig. 2b).

When the booster generator field is excited so that the generator E.M.F. assists the line voltage, the booster motor acts as a motor and the booster generator acts as a generator. In this condition the voltage across three traction motors in series = line volts + booster generator volts. At full boost this is approximately double the line voltage, so that the voltage across each traction motor is $1,200/3 = 400$ volts, this being the rated voltage of the traction motors.

It may be noted that though double the line voltage is supplied to the traction motors at full boost, at no point of the system does the voltage to earth rise above line voltage, as can be seen from the distribution of voltage shown in Fig. 2c. The locomotive power circuits and control arrangements are shown in more detail in Fig. 3.

Booster Set Control

The booster sets are started normally by means of push buttons, which when momentarily pressed initiate a starting sequence. The cast-iron grid starting resistances are mounted in ventilated compartments at the side of the locomotive. Separate resistance banks are provided for each booster set, and sections of re-

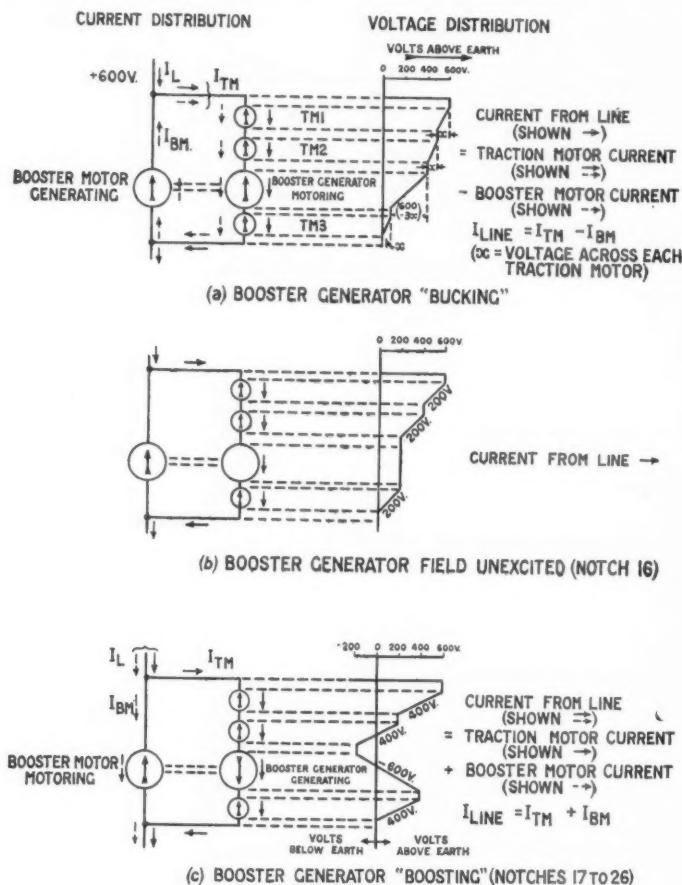


Fig. 2 (a to c)—Booster and traction motor operating conditions during acceleration

rent. With this arrangement every notch on the controller is a running notch so that there is great flexibility in operation, there being 26 controller notches in all.

There are two booster sets per locomotive, each consisting of a 600-volt motor and a 0 to plus or minus 600-volt generator, direct-coupled. Each set has a heavy flywheel, of approximately the same diameter as the frame of the machine, mounted on its shaft between the motor and the generator, and is provided with an electro-pneumatically operated Ferodo-lined brake acting on the flywheel rim, for use in emergency. The three series-wound tapped field traction motors mounted on each bogie are connected in series with the generator of one of the booster sets, the generator being located electrically between the second and third motor of the series.

By virtue of the energy stored in the flywheels, if the locomotive were to run on to a dead section of the conductor rail, the boosters would charge it to approximately line voltage, were means not taken to avoid this. In the case of a section

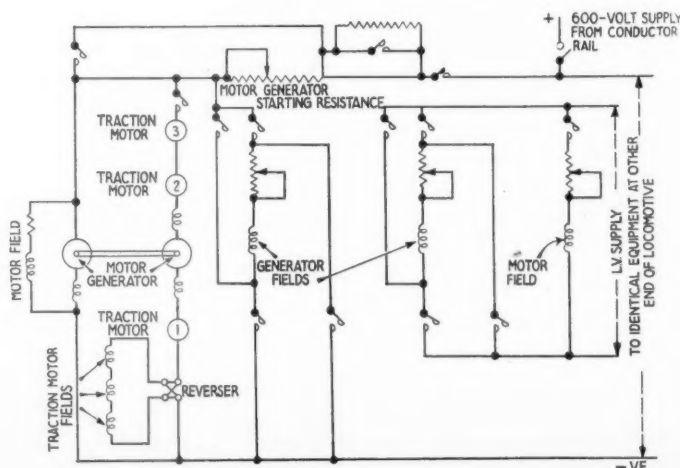


Fig. 3—Schematic circuit of locomotive control system

sistance are cut out by electro-pneumatic contactors under the automatic control of current limit relays, until the booster motors are connected directly to the line. The whole process is automatic and requires no action on the part of the driver once the starting button has been pressed.

When the locomotive running under power passes over a gap in the conductor rail, the starting resistances are re-inserted in circuit by a no-current relay. Meanwhile the sets continue running on flywheel kinetic energy, the booster motor acting as a plain shunt generator to maintain voltage on the traction motors and feed the line exhauster in place of the 600 volt supply, and the booster generator continues to operate as before. It will be seen that no alterations in the traction motor circuits are necessary under gap conditions, as they continue to derive power from the boosters so long as kinetic energy is available.

When the collector shoes again come on to an energised conductor rail, the starting resistances are cut out automatically once more, but using other current limit relays with a higher current setting than is used for normal starting of the boosters. In this way power is restored step by step to both boosters and traction motors simultaneously.

Voltage relays ensure that no power can be taken from any set at starting until it is running at its correct speed and generating the correct E.M.F. The booster sets are stopped by push-buttons mounted in the cabs, labelled "Booster Stop and Brake." When a button is pushed and almost immediately released, there is a momentary application of the booster brake, which by means of an interlock breaks the feed to the booster control circuit. This is the normal means of stopping a booster set; the set is allowed to come to rest naturally. If the same button is kept pressed, the booster brake is held on and the set may be braked to standstill thereby.

All the booster control buttons and indicator lights are mounted on a panel attached to the centre of the front wall of the cab. Here there are "Start" button and "Stop and Brake" buttons for each of 4 booster sets, in addition to overload reset and pantograph control buttons. Since the locomotive is designed also for multiple unit control with another similar machine, controls and indicator lights are provided for a total of 4 booster sets. There are also booster set start and stop push-buttons mounted on each of the two main equipment frames in the body of the locomotive.

Master Controllers

The master controller is mounted inside the driver's desk and consists of a horizontal drum carrying a number of cams, cut from insulating material, each of which operates through its follower a silver butt contact switch. The horizontal drum is driven from the controller handwheel through bevel gearing. In addition to this main handwheel, there is on the driver's side a reversing handle, with "Reverse," "Off," "Forward Full Field" and "Forward Weak Field" positions; and on the off side the control key switch, which has "On" and "Off" positions, the handle being removable in the "Off" position only.

Mechanical interlocking in the controller is such that no conflicting movements can be made: when the control key switch is thrown to "On," the reverser handle may be moved to "Forward Full Field"

or to "Reverse," it being then impossible to reverse the control key switch. The main handwheel can then be moved away from its "Off" position to notch 1, and notching can thereafter be carried on up to notch 23.

Notches 24, 25 and 26 control field weakening by two stages of traction motor field diversion, finishing with a field tap stage. These notches cannot be taken until the reverser handle is moved to "Forward Weak Field" against a spring. On notching back below notch 24, the reverser handle flies back to the "Forward Full Field" position. The interlocking then prevents the use of notches 24, 25 and 26 as before until the reverser handle is again moved to "Forward Weak Field." All 26 notches are running notches.

Safety Interlocks

Whenever the main handwheel is away from the "Off" position, neither the reverser handle nor the control key switch can be turned to the "Off" position. In addition, when the reverser handle is not in the "Off" position, a deadman's pedal, of which there are two in each cab, one at each side under the desk—must be kept depressed by the driver's foot. Release of this pedal leads to the opening of the feed to the traction motors and, after a time delay, to a brake application in two stages both on the locomotive and on the train if vacuum braked.

The rate of acceleration is under the driver's control subject to the overriding control of overload relays. Two ammeters are mounted on the desk in front of the driver. To assist him, the normal accelerating currents are indicated by red marks on the scales. The early notches are graded so as to permit a very smooth start when working freight trains, and the large number of running notches makes it possible to choose one suitable to any running condition.

Power supply to the traction motors is governed by electro-pneumatic reversers and contactors, operated from the master controller. The field tap is selected by an electro-pneumatic changeover switch. A portion of the field winding of each of the two booster generators is supplied from the battery. These windings are connected in series with one another and with a bank of regulating resistances. The remaining portion of the field winding of each of the two booster generators is supplied from the line. These windings also are connected in series with one another and with a set of regulating resistances. The field reversing and discharging is effected by specially designed electro-pneumatic contactors.

So far as is possible, the motors on the two bogies and their associated electrical control equipments have been kept electrically and physically separate so that no fault shall disable more than half the locomotive tractive effort. In the case of the booster generator low tension and line fields, changeover knife switches are provided so that, should it be necessary to cut out one booster set in emergency, its field can be eliminated from the controlled circuit and replaced by substitutional resistances.

The main control equipment is mounted on two main equipment frames in the body of the locomotive, one on each side of the boiler compartment. Each frame carries the line breaker contactors, booster starting contactors, reverser, field tap switch, relays, etc., belonging to one booster set and its three associated trac-

tion motors. The No. 1 frame houses in addition the shoe isolating switch, the no-current relay, and the earth fault relays.

Lighter control equipment, including the boiler control panel, and field control and reversing contactors, is mounted against the side of the locomotive on the opposite side to the battery and the main resistances. Auxiliary lighting, compressor, exhauster, boiler, and other control switches are placed in two auxiliary switch cupboards mounted one in each driver's compartment, the cupboards forming part of the partitions between the drivers' compartments and the main equipment compartment.

Current for the control circuits and for battery charging is provided by a 600/150-volt motor generator set of 9 kW. capacity, the output voltage being kept constant within narrow limits by a generator shunt field regulator of the carbon pile type. A substitutional resistance is provided which may be used to maintain the L.T. supply from the M.G. set in case of a failure of the carbon pile regulator.

A 98-cell nickel-cadmium battery is carried in compartments on one side of the locomotive. The doors to these compartments are on the outside of the body, and there is no connection between the battery compartment and the locomotive interior. Ample ventilation is provided, so as to make it impossible for dangerous pockets of gas to accumulate. The battery normally floats across the auxiliary motor generator set, receiving a small trickle charge. Should the motor generator set supply fail, the battery supplies the control circuit, the main booster set low-tension fields, the lights, and the small exhauster.

Current is collected from the conductor rail by Southern Region standard collector shoes, of which there are eight per locomotive, two on each side of each bogie on shoe beams supported from the axleboxes. A double pan pantograph is mounted in the middle of the roof to enable current to be collected from an overhead wire when the locomotive is operating in sidings so equipped. The pantograph fuse is an enclosed cartridge high rupturing capacity fuse mounted in the body of the locomotive.

Train Heating Boiler

An electrically-heated single-drum boiler in the middle of the equipment compartment supplies steam when required for heating coaches attached to the locomotive, and will meet the normal heating needs of a 12-coach train. The boiler stands on its feedwater tank, and tank and boiler are partitioned off from the equipment compartment. Tank filling openings are arranged so that the normal steam locomotive water cranes may be used; they are located in the side walls of the locomotive, accessible only from outside, in order to prevent any entry of water into the electrical equipment compartment.

The heating elements are open-coil, spiral-wound wires stretched in quartzite tubes inserted in the boiler tubes. There are 144 elements, connected six in series, with a separate cartridge-type fuse in an enclosed holder in each circuit—24 fuses in all. In addition to the 24 separate circuit fuses, there is a main fuse carrying the whole of the current.

The elements are divided into three groups, each supplied through a separate contactor controlled by a steam pressure

Electric Traction Section

switch. The steam pressure switches are calibrated to operate at three slightly different pressures, so that the number of elements cut in will depend on the steam demanded from the boiler. When the locomotive enters a gap in the conductor rail, the boiler, being fed from the shoe side of the main line-breakers, is isolated from the booster sets and consequently cannot drain kinetic energy from them.

Feedwater is supplied by means of a horizontal electrically-driven reciprocating pump. The pump motor is fed through a contactor, the coil circuit of which is controlled by a water level operated switch. This control switch has a water chamber with a floating ball which rises or falls with changing water level, so operating a pair of quick-action electrical contacts. A water level safety thermostat is provided immediately above the top row of element tubes, and connected to them by a copper strip to give good thermal conductivity. It is set to trip at a relatively high temperature, which will not occur unless the water level falls below the level of the top row of tubes. In such an event the opera-

tion of the thermostat will interrupt the control supply to the heater contactors and so shut down the boiler.

Other Auxiliary Machines

Compressed air is furnished by two Westinghouse D.H.25 motor-driven compressors hung from the underframe between the bogies. These compressors also provide the air for actuating pneumatic sanding gear, whistles, window wipers, the pantograph and E.P. control gear.

Two Consolidated Reavell motor-driven vacuum exhausters are provided, one operating at line voltage and the other from the 150-volt battery. The latter is to facilitate maintenance of the vacuum when the locomotive collector shoes are passing over very long gaps in the conductor rail.

The mechanical parts of the locomotive were designed and built to the requirements of Mr. O. V. Bulleid, Chief Mechanical Engineer, Southern Region, in the railway's workshops. The electrical equipment has been developed from that originally designed for the first Southern

electric locomotive, No. CC1 (now No. 20001), which owed its initial realisation and final production as a successful power unit to the talents of Mr. Alfred Raworth, formerly Chief Electrical Engineer of the Southern Railway.

This original scheme was supplemented, and in some aspects redesigned, in the light of experience; and was built into the second locomotive (now No. 20002) under the guidance of his successor, Mr. C. M. Cock, the last Chief Electrical Engineer of the Southern Railway. The English Electric Co. Ltd. was the contractor for both electrical equipments.

No. 20003 therefore embodies all the knowledge and experience built up over a period of some eight years with the first two locomotives, and contains some of the most modern apparatus of its kind. The whole of the electrical equipment, with the exception of the control battery and the compressors, was supplied by the English Electric Co. Ltd., acting as main contractor, to the requirements of Mr. S. B. Warder, Electrical Engineer, Southern Region.

New Ganz-Kandó 50-cycle Locomotive

Five 3-phase motors operated on variable-frequency supply obtained by conversion of single-phase line current

THE Hungarian Ganz Works is continuing with the development of electric traction on a 50-cycle single-phase supply, using the Kandó system. Locomotives of this type can be made considerably lighter than d.c. machines of equal capacity, and scarcely heavier than the lightest 16 2/3-cycle locomotives.

The Kandó system involves running costs almost identical with those of d.c. locomotives, but capital expenditure on electrification may be much reduced because fewer substations are needed. Compared with the 16 2/3-cycle system, the costs for locomotives, overhead lines, and substation transformers are about the same. It is a disadvantage of the older system, however, that it requires special plant for generating its primary power, while the Kandó system can be

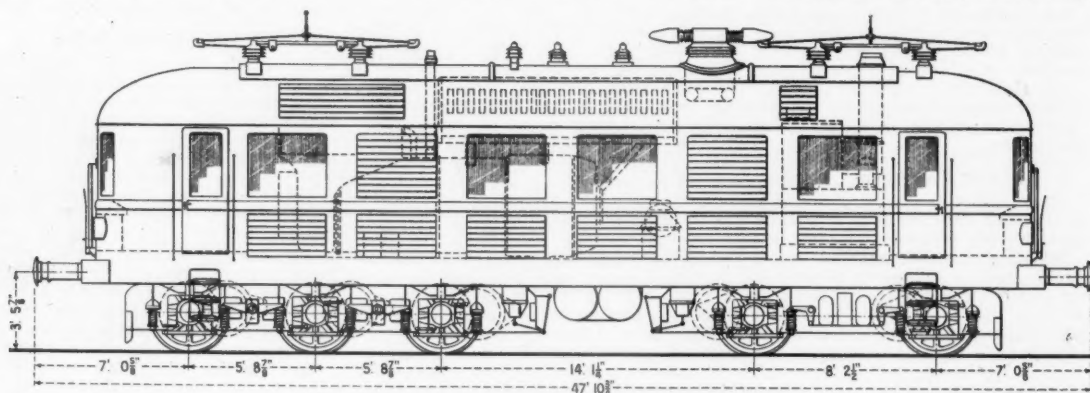
is converted by rotary machinery in the locomotive to three-phase current, the frequency of which can be varied in five steps to give economical running speeds of 15½, 31, 46½, 62, and 77½ m.p.h. respectively. Five slip-ring induction motors with individual axle drive are used for traction. These are of low weight and small dimensions so that the bogies are of straightforward construction and the weight of the locomotive has been cut down to the very economic figure of 85 tonnes, which was the minimum imposed by the requirements of adhesion.

The main electrical equipment of the locomotive comprises: the phase-converter, built in the same frame and coupled mechanically with the frequency converter; the five traction motors (one for each axle); oil-immersed starter, con-

axles, and the whole machine measures 48 ft. in overall length. Even on curves, high speeds can be maintained by reason of the bogie arrangement with five driving axles. The motors, with their rugged design and special system of suspension, are exceptionally immune from the effects of mechanical shocks.

The locomotive has favourable operating characteristics, being capable of hauling 1,500-tonne freight trains, even on rising gradients of 1 in 250, at a speed of 46½ m.p.h., and 750-tonne express passenger trains at a speed of 77½ m.p.h. Two locomotives coupled together, using standard European drawgear, could meet all requirements of heavy mountain sections. Owing to its induction traction motors, the locomotive has a constant speed characteristic irrespective of load. Similarly, the locomotive maintains the speed chosen by the driver on down grades, regenerative braking coming into operation automatically if the train tries to exceed the speed appropriate to the position of the controller.

Economical in outlay and running costs,



Elevation of Ganz-Kandó 50-cycle locomotive

fed directly from the industrial high-tension network.

One of the latest products of the Hungarian electric traction industry is a 3,200-h.p. Ganz-Kandó locomotive. The single-phase supply from the overhead line

connected to the slip-rings of the traction motors; and the switchgear between the phase and frequency converters, and between the latter and the traction motors.

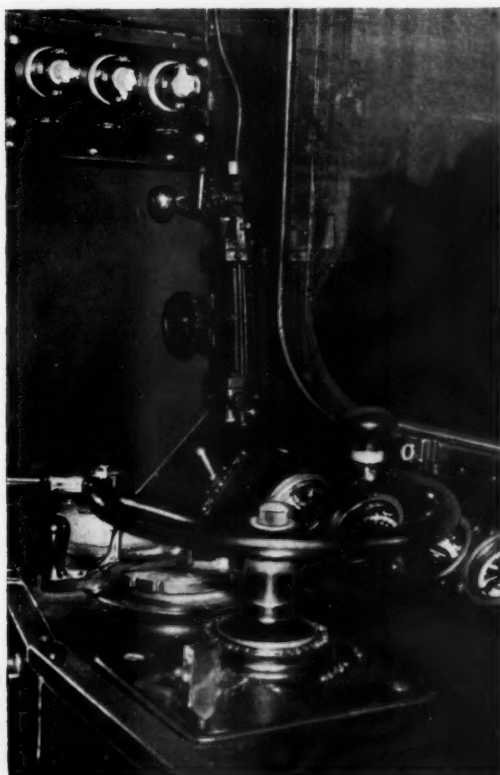
The locomotive body is carried on two bogies, one with three and one with two

and meeting a wide range of service requirements, the new Ganz-Kandó 50-cycle electric locomotive offers prospects of further development of a traction system which owes its inception to Hungary.

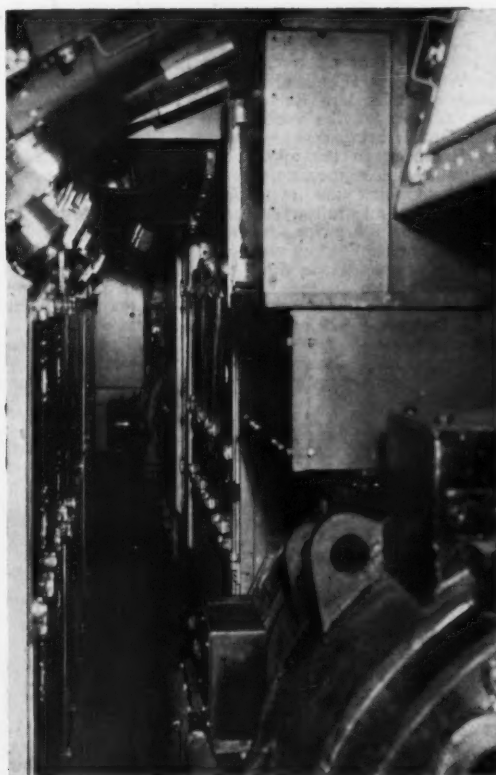
Southern Region Electric Locomotive No. 20003



Battery side of locomotive. The six openings in the roof are for traction motor and booster ventilation; the group of louvres in the centre are for power resistance cooling; those at each end are for battery ventilation



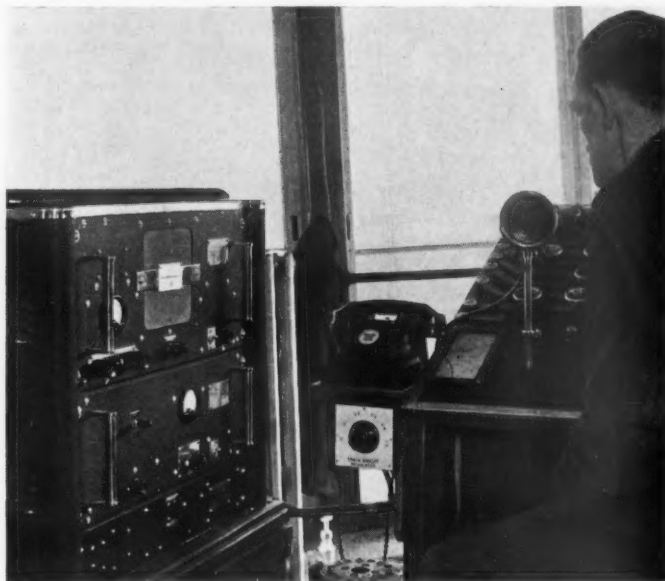
Driving position, showing controller handwheel and reverser handle in foreground, with brake valves beyond. Two ammeters, with normal accelerating currents indicated by red lines on the scales, are provided in the driver's desk



Looking down one of the side corridors inside the locomotive. The battery and power resistances are on the left; the main control frames are on the right. One of the booster sets is shown in the right foreground

Radio-Telephony at Whitemoor Yard

Trial installation in the Eastern Region of British Railways to facilitate the movement of freight traffic



Microphone and amplifier in control tower

THE installation of radio-telephony in the Whitemoor (Cambridgeshire) up marshalling yard, Eastern Region, British Railways, is part of the extensive programme of trials being sponsored by the Railway Executive in the application of radio to traffic and engineering operations, and marks the first use of radio-telephony for practical railway operations in this country. By giving direct communication between the ground control staff and the crews of the diesel-electric shunting locomotives in the marshalling yard, much valuable time is expected to be saved, as compared with previous methods of communication by messenger, megaphone, or loudspeaker.

A fixed radio transmitter/receiver

station has been provided in the control tower, with remote control in the foreman's cabin, and mobile equipment is being installed in the four diesel-electric shunting locomotives used in the yard. The first locomotive now is fitted, and it is hoped to have a further three so equipped by June. Transmission is normally between the foreman's cabin at the hump and the shunting engines, but facilities are provided for the point controller in the control tower to break in and make announcements direct to the shunting engines, in the event of emergency.

The diesel-electric locomotives carry out several duties. Their chief function is to push freight trains from the reception sid-

ings to the summit of the hump, whence the wagons, which already have been uncoupled as necessary, run by gravity to their appropriate marshalling sidings. Whilst this operation—known as humping—is in progress, the locomotive pushing the train is under the control of a three-position signal, which shows a "Go forward smartly," "Go forward at normal shunting speed," or "Stop" indication.

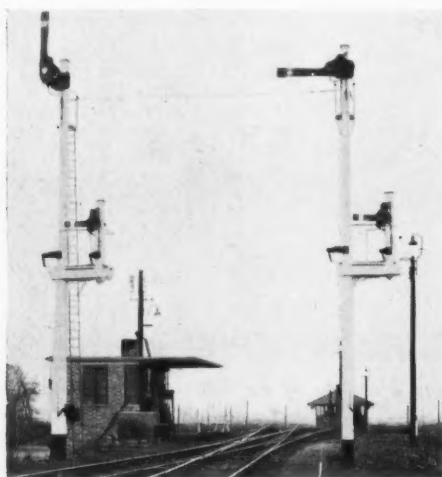
When the humping operation is finished, the locomotive may return to the reception sidings to deal similarly with another train, or it may be needed in the marshalling sidings to push wagons towards the exit, or move wagons to and from the transit shed. Also, the locomotive may be required to move under-runners to wagons with overhanging loads.

Hitherto, instructions to the engine driver in all these and other cases have had to be conveyed by messenger, megaphone, or loudspeaker. The radio installation now in operation is designed to reduce the unproductive time spent by these means of communication.

Normally, for "fixed to mobile" communication, vertical polarisation would be used, but, due to loading gauge restrictions on the locomotives, it was impossible to fix a vertical aerial in such a way which, whilst bringing the aerial within the loading gauge, would not be unduly screened by the mass of the engine. Under the circumstances, horizontal polarisation, which was found to give adequate coverage, was used, and the aerial mounted on top of the locomotive cab. These aerials are supported on three insulators and bowed to conform to the outline of the cab. To ensure a watertight entry for the aerial feeder, it is led through the centre insulator, the base of which provides a sealed cover for the entry of the feeder into the cab.

The fixed station aerial is mounted horizontally on a metal mast secured by two sets of chimney brackets to the chimney stack on the control tower. The fixed station equipment consists of: (i) receiver chassis and an a.c. power pack chassis, mounted on a common panel, together with a 6½-in. loudspeaker; (ii) transmitter chassis combining the modulator and an a.c. power pack chassis mounted on a common panel; (iii) remote control panel.

The receiver contains 17 valves, comprising 2-R.F. amplifiers, mixer, oscillator-



Whitemoor up marshalling yard, Eastern Region. Left: Three-position signal for hump shunting. Right: Control tower and sidings from the hump

multiplier, 2nd multiplier, 3-I.F. amplifiers, double-diode detector and A.V.C. rectifier, A.F. amplifier and output stage. The remaining valves in the receiver are used to provide a muting circuit in the absence of a signal.

The transmitter contains 10 valves comprising an oscillator-multiplier, 2nd multiplier, drive amplifier, power amplifier and modulator using a push-pull pre-amplifier. One modulator stage supplies anode modulation to the R.F. power amplifier. The remote control panel provides for relay control of the mains supply to the fixed station and for the transmit/receive switching to be carried out from the up hump foreman's cabin.

The receiver, transmitter and remote control panels are rack mounted and located alongside the point controller's desk, with the microphone fitted on the control desk. These positions were selected to ensure the minimum time was required to enable the point controller to make an emergency transmission.

Shunting instructions are given by the up hump foreman, and a remote control unit has been provided in the foreman's cabin, control of the fixed station being over a single pair telephone line. The remote control unit contains amplifiers for the incoming and outgoing speech circuits and associated power supply unit. A microphone and loudspeaker are provided as for the fixed station.

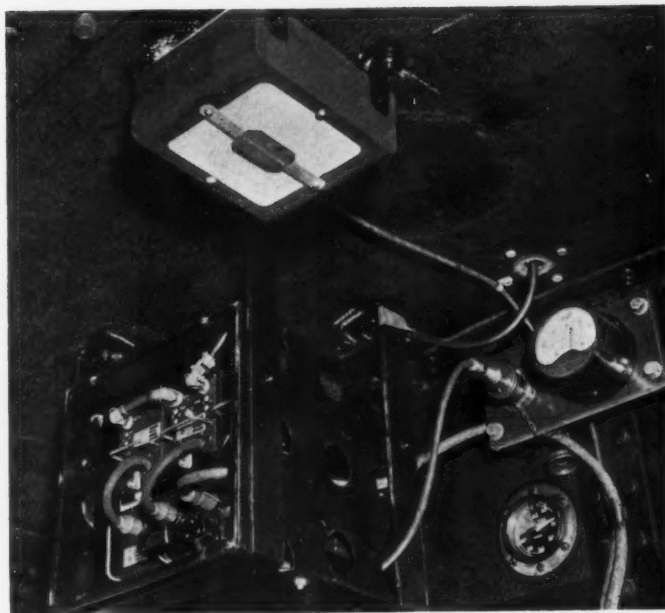
This equipment is located inside the foreman's cabin and enables transmissions to be made from a protected position as circumstances permit. Normal control of shunting however, is carried out from outside the cabin, the foreman standing about 2 ft. from the track so that he can check the wagons as they pass over the hump. To enable the foreman to carry out his duties, at the same time giving him considerable freedom of movement, a standard-type hand micro-telephone has been provided with a Pressel switch for operating the transmit/receive switch. As the wall of the foreman's cabin is some 6 ft. from the point where the foreman stands during shunting, the cable is carried on a swivelling arm. When not

in use, the hand micro-telephone rests on a switch hook. A loudspeaker is provided to call the foreman when he is outside the cabin; this loudspeaker is disconnected by the switch hook when the handset is removed.

The installation of the equipment on the locomotives, presented some difficulties, because of the restricted space available. The transmitter, receiver, amplifier and power unit, all assembled on a sprung cradle, are fitted in a case, which, in turn, is suspended from the roof of the cab. The receiver contains 11 valves, comprising an R.F. amplifier, mixer, oscillator-multiplier, second multiplier, 3-I.F.

amplifiers, double-diode detector and A.V.C. rectifier, double-diode noise limiter, A.F. amplifier and output stage. The transmitter uses 10 valves, consisting of oscillator-multiplier, second multiplier, drive amplifier and power amplifier. Modulation to the transmitter is applied to the power amplifier stage through a transformer, which is supplied with A.F. power at low impedance from the amplifier unit. The power unit contains the rotary transformers for producing the H.T. supplies for the associated units. The loudspeaker is centrally mounted to the underside of the cab roof.

(Continued on page 328)



Amplifier and loudspeaker in cab of diesel-electric shunter



Equipment outside hump foreman's cabin



Hand microphone and selector gear in engine cab

A New Method of Glass Conveyance

Padded cradles and shock-absorbing wagons will expedite the transport of sheet glass and obviate damage to it while in transit

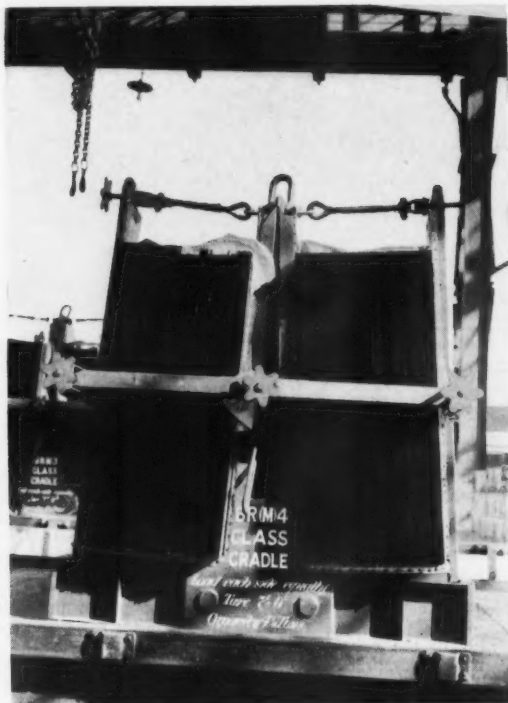
THE London Midland Region has introduced new wagons and cradles for the conveyance of sheet glass from the works of Pilkington Bros. Ltd., the glass manufacturers of St. Helens, Lancs. They are the result of experiments begun in 1946 by the former L.M.S.R. and the firm.

loading and unloading. All clamping and securing of the glass is performed by mechanical means without the aid of ropes or loose packing.

The cradle is of steel construction and made up of two end units in the form of an inverted "T" permanently joined at

vent any longitudinal movement of the glass, a swivelling adjustable steel beam is attached to the centre supports by a screw and is further secured at each end to the side frame by a screw clamp.

A swivelling shackle is fitted to the top of each centre support for lifting, and a loop is attached to each end for securing the cradle to the wagon floor by an adjustable holding-down chain. The maximum length and width of glass which the cradle will accommodate are 66 in. and 48 in. respectively. Protection



Glass-carrying cradle in position on road vehicle



Cradle being lifted from railway wagon

The loads of glass are distributed equally on each side of a felt-padded cradle and held in position with clamps. The cradles are removable and can be carried in both wagons and road vehicles. When travelling by rail they nest in sockets in the wagon floor. They are transhipped from rail to road by crane.

The new wagons have shock-absorbing equipment allowing the body, in which the cradles are fitted, to "float" on springs, eliminating damage to the glass from violent movement during transit.

The main features of the cradle are its light weight and accessibility, both for

the top and bottom by one rectangular and two tubular members respectively. The main members are of $\frac{1}{4}$ -in. thick pressed-steel channels, and the uprights and base are faced with felt-covered timber bearers. The faces of the centre supports are arranged to slope together so that the two packs of glass will tilt inwards.

Each pack of glass is cramped independently by a felt-covered detachable steel frame, housed in sockets at the base and tightened by screws at the top, which in turn are connected to the centre supports by detachable wire ropes. To pre-

vent inclement weather between rail-head and glass warehouse is provided for by a waterproof cover.

The tare is 7 cwt. and the capacity 4 tons 5 cwt., making a gross tare of 4 tons 12 cwt. per cradle. Two of these units are carried in one wagon. The wagons can each carry 8½ tons of sheet glass in two cradles, compared with the load of 3 to 5 tons packed in crates carried by former methods.

The transport of sheet glass by this improved method will be extended to other areas as more new-type wagons become available.

Radio-Telephony at Whitemoor Yard

(Concluded from page 327)

As the locomotives can be driven from either side of the cab, it was necessary for the microphone and switch control unit to be readily accessible from these two positions. Accordingly, the switch unit and hand-type microphone were attached by brackets to the electric tachometer unit, the whole of which can be swivelled to face either side of the cab, thus bringing the switching unit and microphone

within easy reach of the driver, irrespective of the driving position that is being used.

The switch control unit performs the following functions: Equipment "Off"; Receive only (listening watch being maintained); Receive and Transmit (normal two-way communication). In addition, a three position volume control switch is fitted controlling the volume on the loud-speaker.

Equipment on the locomotives is for 12-volt operation and, for this purpose, a

12-volt, 110-ampere hr. battery is fitted on each locomotive. This battery is charged by a rotary transformer driven from the 80-volt locomotive starting battery. A voltmeter indicating the battery voltage is fitted alongside the transmitter and receiver.

The installation operates on a frequency of 85.425 Mc/s., and the range is adequate to cover the whole of the yard. All oscillators in the transmitters and receivers are crystal controlled and the equipment is designed for amplitude modulation.

Longbenton Station, North Eastern Region



Longbenton Station on the Tyneside electrified Line; of the North Eastern Region of British Railways



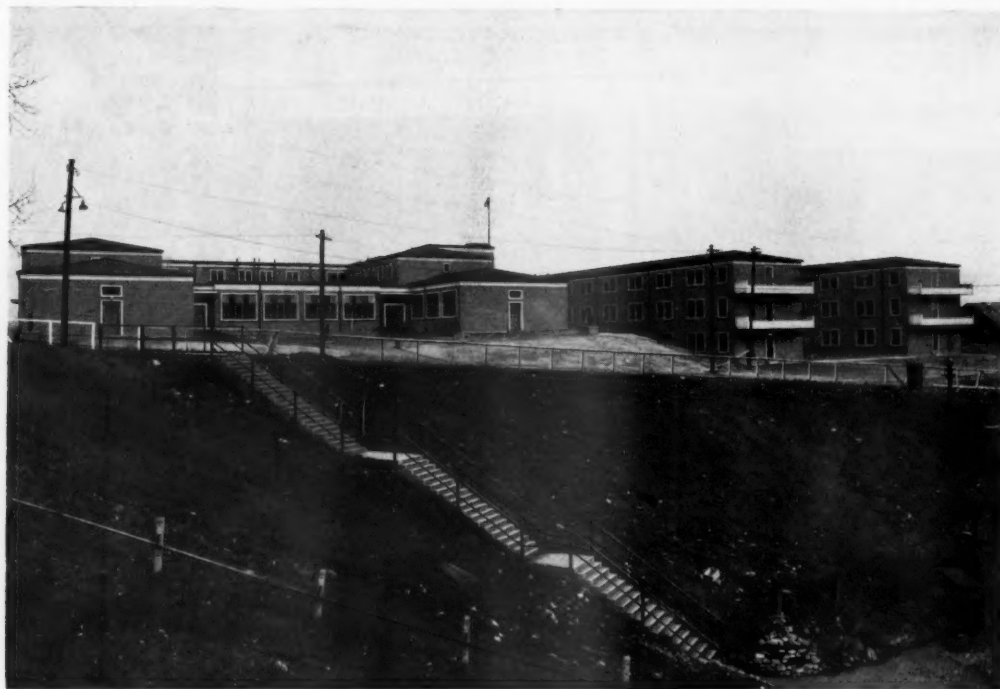
Platforms are 16 ft. wide in the centre, taper to 8 ft. at the ends, and are 500 ft. long



Combined booking, collecting, and enquiry office controlling in and out barriers (see editorial note on page 310)

Old Oak Common Hostel & Canteen, Western Region

(See articles on pages 334 and 335)



Front entrance to Old Oak Common Hostel & Canteen



Inaugural luncheon on March 16 of Old Oak Common Hostel & Canteen

RAILWAY NEWS SECTION

PERSONAL

In a recent statement on railway electrification the New Zealand Government indicates that the necessity for overseas investigations has resulted in the decision to send a departmental mission abroad. This will consist of Mr. P. R. Angus, Chief Mechanical Engineer, Mr. A. J. Ede, Transportation Superintendent, Mr. C. A. Mackersey, Electrical Engineer, and Mr. J. W. Porter, Signal Engineer, New Zealand Government Railways. It is reported that the General Manager, Mr. F. W. Aickin, will follow the mission later to take part in the deliberations and to confer with the directors of the British company which it is proposed to employ as principal contractor.

Subsequent to the sale of the Central Uruguay Railway to the Uruguayan Government, Mr. L. B. Norrish, Chief Mechanical Engineer, has resigned, and is returning to England. Señor Antonio De Anda has been appointed to succeed him.

Mr. Henry Walter Stevens, B.Sc., M.I.C.E., who, as recorded in our February 4 issue, has been appointed General Manager of the Nyasaland Railways and their associate undertaking, the Trans-Zambesia Railway, was educated at Hampton Grammar School, and graduated from Queen Mary's College (University of London). He received his initial training on various engineering works, and joined the Indented Bar & Concrete Engineering Co. Ltd. in 1923. In 1926 he joined the

ing Superintendent, Broken Hill, has been appointed District Superintendent, Broken Hill, in place of Mr. F. Thorn, retired.

Mr. M. W. Davies, Assistant Operating Superintendent, Salisbury, succeeds Mr. Lane as District Superintendent, Salisbury.

Major H. A. Harrison is retiring at the end of May after 19 years as Secretary of the Institution of Locomotive Engineers. He will be succeeded by Mr. G. T. Hart, who recently returned from India, where he was with the Nizam's State Railway as Works Manager.

Colonel Jose Roberto Zubieta has been appointed General Manager, General Roca Railway (former B.A.G.S.R.), in place of Señor Mora, resigned.



Mr. Erik Upmark

Appointed General Manager, Swedish State Railways



Mr. H. W. Stevens

Appointed General Manager, Nyasaland Railways and Trans-Zambesia Railway



Mr. J. R. Farquharson

Appointed Chief Engineer & Deputy General Manager, East African Railways & Harbours

Mr. Erik Upmark, previously President of the Fuel Commission in Sweden, who has been appointed General Manager of the Swedish State Railways, is 44 years of age, and is a civil engineer by profession. During his career Mr. Upmark has carried out various engineering works overseas, and he studied for a period in the U.S.A. He is a reserve officer in the Swedish Army.

Mr. Henry Spurrier has been appointed Managing Director of Leyland Motors Limited, of which Mr. C. B. Nixon continues as Chairman & Governing Director.

Mr. Conrad Gribble, formerly Deputy Chief Civil Engineer, Southern Railway, has been engaged by the Crown Agents for the Colonies to conduct an investigation desired by the Government of Ceylon into the strength of its railway bridges, to ascertain whether they are adequate for the present loading permitted on each branch line having regard to the speed restrictions imposed. Inquiry is also to be directed to the framing of a programme to bring the bridges up to the strength required for the maximum anticipated loading. A report is also to be furnished on the general working of the Bridges Branch of the Chief Engineer's Department. Mr. Gribble will leave for Ceylon towards the end of this summer for the first tour of inspection.

Buenos Ayres Great Southern Railway as an Assistant Engineer, and was engaged on the design of the new terminal station at Plaza Constitución, Buenos Aires. In the next year he was transferred to constructional work, and he became Construction Engineer for the Vergara-Lezama extension (1929-31); Assistant District Engineer, Plaza Constitución (1931-33); and Construction Engineer for the Pilcaniyeu-Bariloche extension of the Argentine State Railways (1933-34). He returned to the headquarters of the B.A.G.S.R. towards the end of 1934 as Assistant Engineer for Water Supply & Power Plant. Mr. Stevens was appointed Inspecting Engineer in 1937; Maintenance Engineer in 1945; and Engineer-in-Chief & Deputy General Manager in 1947. In February, 1948, he was transferred to the Management as Assistant Manager, B.A.G.S.R. and B.A.W.R., and General Manager of the Buenos Ayres Midland Railway.

RHODESIA RAILWAYS

Mr. L. W. Lane, District Superintendent, Salisbury, has been appointed Deputy Chief Superintendent, Bulawayo.

Mr. A. H. Croxton, Acting Operating Superintendent, Bulawayo, has been appointed District Superintendent, Bulawayo, in place of Mr. N. T. Hunt, retired.

Mr. J. W. S. Pegrum, Assistant Operat-

ing Superintendent, Broken Hill, has been appointed District Superintendent, Broken Hill, in place of Mr. F. Thorn, retired.

Mr. M. W. Davies, Assistant Operating Superintendent, Salisbury, succeeds Mr. Lane as District Superintendent, Salisbury.

Major H. A. Harrison is retiring at the end of May after 19 years as Secretary of the Institution of Locomotive Engineers. He will be succeeded by Mr. G. T. Hart, who recently returned from India, where he was with the Nizam's State Railway as Works Manager.

Colonel Jose Roberto Zubieta has been appointed General Manager, General Roca Railway (former B.A.G.S.R.), in place of Señor Mora, resigned.

Mr. J. R. Farquharson, C.B.E., B.Sc., who was recently appointed Chief Engineer & Deputy General Manager, East African Railways & Harbours, attended the Royal Technical College, Glasgow, graduated B.Sc. at Glasgow University and obtained the diploma of the Royal Technical College in 1923. From then until 1925 he was Junior Assistant Engineer in the Western District, Lowland Division, Glasgow, L.M.S.R. In October, 1925, he was appointed Assistant Engineer, Kenya & Uganda Railways, and later became Senior Assistant Engineer. In May, 1937, Mr. Farquharson was appointed Personal Assistant to General Manager, Tanganyika Government Railways, and in June, 1941, Chief Engineer. From June, 1941, to August, 1942, on a part-time, and from August, 1942, to November, 1945, on a full-time basis, he was seconded for work in the operation of wartime controls in Tanganyika. In December, 1945, he was made General Manager of the Tanganyika Government Railways. From May 1, 1948, the undertakings of the Kenya & Uganda Railways & Harbours and the Tanganyika Railways & Port Services were amalgamated to form the East African Railways & Harbours, of which he at first became Acting Deputy General Manager, and now becomes Chief Engineer & Deputy General Manager.

Mr. J. L. O'Connell, who, as recorded in our February 11 issue, has been appointed Chief Horse Superintendent to the Railway Executive, was educated at Cork, at Trinity College, Dublin, and at the Veterinary College of Ireland. He obtained first class honours in many subjects, and the silver medal for Animal Husbandry. In 1935 he joined the L.M.S.R. as Assistant Veterinary Surgeon, London; he became Assistant Horse Superintendent, London, and then Horse Superintendent at the age of 30. In May, 1945, he was appointed Chief Veterinary Surgeon & Horse Superintendent of the L.M.S.R. He is a Member of Council of the British Horse Society of Great Britain, and a Member of



Mr. J. L. O'Connell

Appointed Chief Horse Superintendent to the Railway Executive

Council of the Worshipful Company of Farriers, and is on that body's board of examiners.

Mr. J. A. Gnanapragasam has been appointed to officiate as Assistant General Manager (Operating), Ceylon Government Railway.

We regret to record the death on March 19, at the age of 76, of Sir Harold Snagge, K.B.E., a Director of the Forestal Land, Timber & Railways Co. Ltd., and formerly Chairman of D. Napier & Sons Ltd.

Mr. C. Morrison, Assistant to Commercial Superintendent (Passenger), has been appointed Assistant to Commercial Superintendent (Goods), Glasgow, and Mr. J. McMaster, Passenger Rates & Fares Assistant to Commercial Superintendent, has been appointed Assistant to Commercial Superintendent (Passenger), Glasgow, Scottish Region, British Railways.

We regret to record the death on March 14 in his 78th year, of Mr. Harold William Chinn, who retired in 1937 from the position of Assistant Solicitor (Conveyancing), Southern Railway. He was educated at Rugby, and served articles in Lichfield and London. He was admitted a solicitor in 1896, and a year later entered the Solicitor's Office of the Great Western Railway. In 1913 he joined the Solicitor's staff of the L.S.W.R. On the grouping in 1923

he became the senior Assistant Solicitor of the Southern Railway; and he retired in 1937.

Sir George Beharrell, Chairman of the Dunlop Rubber Co. Ltd., has returned to England from a visit to the Dunlop organisation in South Africa.

Mr. C. D. Young, a Vice-President of the Pennsylvania Railroad, has been appointed by the Turkish Government as General Adviser to its Ministry of Communications.

Mr. G. Smith, Assistant District Superintendent, Hull, has been appointed District Operating Superintendent, Hull, North Eastern Region, British Railways.

Lord Latham, Chairman of the London Transport Executive, has accepted an invitation from the Lord President of the Council to join the council of the Festival of Britain, 1951.

The Travel Association (Tourist Division of the British Tourist & Holidays Board) has announced the appointment of Sir Harold Boulton as Chief Representative for the "Come to Britain" organisation in North America. Mr. Louis Law will continue to discharge the duties of General Manager of the Travel Association in the United States.

Mr. Charles Smith has been appointed a Local Director of John Smith (Keighley) Limited.

Mr. Herbert Lawton, Assistant Production Manager, Metropolitan-Cammell Carriage & Wagon Co. Ltd., Saltley, and Mr. J. S. Scott, Locomotive Works Manager, Cowlairst, Scottish Region, British Railways, have been transferred from Associate Membership to Membership of the Institution of Locomotive Engineers.

Sir Roy Fedden has been appointed a member of the board of Leyland Motors Limited, with the title of Director of Research & Development; he will be in charge of a new establishment, dealing with long-term plans, separate from the present Research Department, which will continue to be responsible for short-term projects.

Mr. William Urquhart, Rates Assistant to the Commercial Superintendent, Scottish Region, British Railways, has retired. For the past ten years he has been Secretary of the Scottish & Irish Traffic Conference. To mark the occasion of his retirement, Mr. Urquhart has been the recipient of a gold watch from members of the Conference, and a wireless set, presented by Mr. W. Yeaman, Commercial Superintendent, on behalf of his railway colleagues.

ROAD TRANSPORT EXECUTIVE

The Road Transport Executive has announced the following appointments:—

Mr. W. C. Leslie-Carter to be Chief Surveyor and Architect.

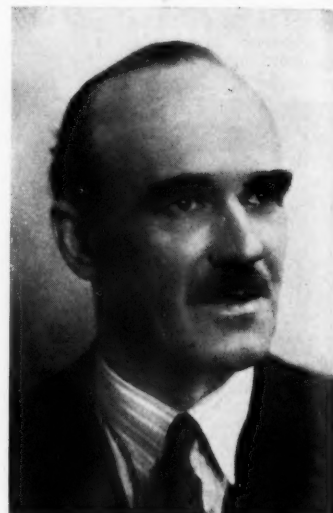
Mr. C. Johnson to be Officer in charge of Acquisition Section, Organisation Department.

To be Divisional Surveyors (Freight): Mr. E. A. W. Gadd, South Eastern; Mr. A. H. Wyndham Lewis, Western.

To be Divisional Engineer (Freight): Mr. W. R. T. Thomas, North Eastern.

To be District Managers (Freight): Mr. A. Porter, Norwich; Mr. W. B. Street, Reading; Mr. W. J. Irons, South West.

Mr. J. W. Dedman, A.M.Inst.T., Assistant District Operating Superintendent, Glasgow, Scottish Region, British Railways, who has been appointed District Operating Superintendent, Southend, Eastern Region, joined the North Eastern Railway at Norton-on-Tees in 1917. After serving at various stations, in the District Goods Manager's Office, Middlesbrough, and in the Goods Manager's Office, York, he was Personal Clerk to the Divisional General Manager, North Eastern Area, L.N.E.R., 1926-28. He was then transferred to the Chief General Manager's Office at Kings Cross, and in 1930 returned to the North Eastern Area, serving successively at York, Hull, and



Mr. J. W. Dedman

Appointed District Operating Superintendent, Southend, Eastern Region, British Railways

Darlington, where he was Chief Staff Clerk, 1932-37. In 1937 he became Assistant Goods Agent, Newcastle Forth, and in the next year was appointed to the Superintendent's Office, York, remaining there until 1942, when he was appointed Assistant District Superintendent, Edinburgh. He was made Assistant District Superintendent, Glasgow, in 1946.

Mr. J. C. Grocock, Chief Engineer of Sulzer Bros. (London) Ltd., has been appointed a Director.

Mr. John Ayres has been appointed a Local Director of the Brush Electrical Engineering Co. Ltd., with the title of Works Director.

On the retirement of Mr. P. S. Bayliss and Mr. F. W. Bayliss from the company, Mr. F. Usher-Smith and Mr. R. M. Hyslop have been appointed Managing Directors of Bayliss, Jones & Bayliss Limited.

Mr. James Maxwell, General Manager of Thos. Cook & Son Ltd., sails today (March 25) in the *Queen Mary* for a tour of the company's offices in the U.S.A. and Canada.

We regret to record the death on February 11 of Brigadier N. B. MacDonald, C.B.E., who during the recent war was Deputy Quartermaster-General at Canadian Military Headquarters in London.

Isle of Man Railway Company

The ordinary general meeting of the Isle of Man Railway Company was held in Douglas on March 9, when the Chairman, Mr. R. Q. Hampton, said that gross receipts were only £220 less than the record total of 1946. They had carried 116,575 more passengers than the previous year, again without accident or untoward incident, and with increased comfort and convenience in their newly reconditioned rolling stock. The total number of passengers amounted to 1,292,000.

Revenue from all sources of traffic, etc., was larger by £7,646, and, while subject to greater working costs, it was still in advance of 1947 by £4,434.

WORK CARRIED OUT

Much had been done towards reconditioning their rolling stock although supplies were still hard to obtain. The permanent way and power equipment were the objects of their first consideration and these were now equal in all ways to pre-war standards. Besides completing most of the maintenance they had relaid 1,140 yd. of main line and were prepared to handle all seasonal demands that might be made on them.

With regard to the accounts for the year, a balance of £14,192 was carried to net revenue account, and to this was added the interest from investments, £5,848, and the amount of £2,203 brought forward from the preceding year, making a total of £22,244. The first charge on this was the debenture interest amounting to £7,000. The remaining £15,003 was satisfactory in that it enabled them to make provision for future needs.

They felt it a wise course to set aside a further £6,600 to the renewals account, thus leaving £8,403, which was now brought into the general balance sheet as the disposable balance. Out of this they proposed to pay a dividend of 5 per cent. on the preference share capital, amounting to £2,500, and a dividend of 2½ per cent. on the ordinary share capital, amounting to £3,500, leaving £2,403 to be carried forward.

Reserves now totalled approximately £93,000. Their liquid assets, together with the investment in their subsidiary company, the Isle of Man Road Services—which was undoubtedly the most remunerative and strengthening asset of them all because of its complementary value to railway working—totalled £87,204 with a depreciation reserve against them of £4,777.

UNREASONABLE OPPOSITION

In 1947 the company introduced the use of double-deck buses which, with further additions last year, had proved a great success in easing their traffic problems. This relief might have been available to the travelling public a year earlier but for a good deal of short-sighted and unreasonable opposition.

Today they felt that their policy—and it was a bold step in financial as well as in practical ways—was completely justified. It had met with widespread appreciation. They had recently received a further 18 of the most modern Leyland double-deck buses which were being put in commission as early as possible.

The railway system itself, with its unlimited capacity for passenger traffic, for the handling of luggage in advance, etc., besides its large goods traffic, was still the backbone of the visiting industry and commerce generally in out-town areas.

It had been their aim to fill all insular needs, and the new fleet of double-deckers now in co-ordination with it, made a complete and comprehensive transport system for the whole Island.

The report and accounts were adopted.

British Transport Officers' Guild

The British Transport Officers' Guild (formerly the British Railways Officers' Guild), in a recent statement reminds transport officials that it is now in a position as an Association to represent, in addition to the Railway Executive officers, higher administrative and technical staff, the members of the Hotels Executive and the Docks & Inland Waterways Executive, and those eligible members of nationalised road transport undertakings completely owned or acquired by the British Transport Commission in any part of the country. The objects for which the Guild stands are: (1) to maintain and improve the status of members; (2) to protect their rights and interests, individual and collective, including the provision of legal assistance where warranted; (3) to advance efficiency in the operation of the national transport system.

For the purpose of representation, Great Britain is divided geographically into eleven areas, each with an area committee of seven members, one of whom is Warden representing the area on the executive committee of the Guild, all elected annually by the members in the area.

To become eligible for membership of the Guild, applicants must be in receipt of a salary above £630 per annum. The entrance fee is £1 ls., and the annual subscription £2 2s. The Guild invites inquiries from intending members, who will have opportunities of meeting their local committees and sharing in the discussions at meetings.

A letter from the Master of the Guild, Mr. A. L. Castleman, appears elsewhere in this issue.

Future of Road Transport

At the annual dinner of the Worshipful Company of Carmen, at the Mansion House on March 17, when Mr. B. G. Turner, Master of the Company, was in the chair, the toast of the "Company" was proposed by Mr. Alfred Barnes, Minister of Transport.

In the course of his speech, the Minister said that motorised goods vehicles on the roads of Great Britain numbered about 750,000, and the British Transport Commission was not likely to obtain more than 50,000 long-distance vehicles. In view of this, he noted with pleasure the statement by Sir Cyril Hurcomb, when proposing a similar toast, of his intention to establish a friendly and a practical liaison with the R.H.A.

Mr. B. G. Turner, responding, said that now the goods road transport industry of this country had been virtually divided into two separate components, namely, the B.T.C. on the one hand, and all hauliers who remained outside the Commission on the other, the Worshipful Company of Carmen, if it was to fulfil its duties, must be for all time the happy meeting ground where both sides of the industry could get together and benefit from the friendliness that prevailed within their fellowship. They

had approximately 80 liverymen directly concerned with transport and they were drawn both from within and without the B.T.C. Together they ensured the Company being truly representative of the transport industry as a whole.

Their Company would always be interested in the development and welfare of the B.T.C. and of all free hauliers, and it was hoped that the position would never arise in which one section of the industry was developed at the expense of the other. Both parties were entrusted with the task of supplying the public transport requirements of trade and industry, and by friendly liaison and interworking each should be capable of furthering the work done by the other.

Institution of Railway Signal Engineers

Australian Section: Paper on power signalling practice

The proceedings of the first general meeting of the Australian Section of the Institution of Railway Signal Engineers, held at Sydney, were printed in the *Journal of the Institute of Transport*, New South Wales Centre, a copy of which has now reached us. Mr. W. F. Barton, until recently Signal & Telegraph Engineer, New South Wales Government Railways, presided, and a comprehensive paper on practice and tendencies in power signalling in England and America was presented by Mr. F. Stewart, Signal Engineer of McKenzie & Holland Pty. Ltd., Newport, Melbourne.

A discussion followed, and touched on a variety of points. Mr. P. J. Fahey, Signal & Telegraph Engineer, N.S.W.G.R., thought that the complication of route relay interlocking might increase the difficulties and cost of maintenance. Mr. Beauchamp discussed the Western Region automatic train control, and Mr. Vernon referred to the question of adopting centralised control on certain New South Wales routes. A complete co-operation of locomotive and traffic staff would be essential to its success. He was surprised to find that the London Underground services could be worked so well with 2-aspect signalling. Mr. Martin thought the goal should be to have the minimum number of signal indications to provide maximum information to the drivers.

After Mr. Stewart had replied to all the questions raised, a vote of thanks was moved by Mr. Fahey and seconded by Mr. Martin, who dwelt on the future of the Australian Section and its good prospects.

NEW B.E.A. SERVICES.—Two new British European Airways services, one linking North and South Wales and one between Manchester, Birmingham, and Paris, will be opened on April 11. Aircraft on the Welsh service will start from Liverpool and fly to Cardiff via Hawarden in the morning, returning via Hawarden to Valley, Anglesey, in the afternoon. On the following day, the service will be in the reverse direction, terminating at Liverpool, and so on throughout the week, finishing at Liverpool on Saturday evening. The service to Paris will start from Manchester on Mondays, Wednesdays, and Fridays, calling at Birmingham on the outward journey and returning to Manchester non-stop. On Tuesdays, Thursdays, and Saturdays, the aircraft will fly non-stop from Manchester to Paris, calling at Birmingham on the return flight.

Old Oak Common Hostel & Canteen, Western Region

Canteen and recreational amenities for 2,000 workers and sleeping accommodation for transferred train crews

During and after the war the acute shortage of housing and other accommodation caused considerable difficulty in finding lodgings for train crews transferred away from their homes to meet traffic demands at other centres, and it became apparent that it would be necessary to provide hostels at many places to house the men satisfactorily.

The first hostel, with accommodation for 230 men, was provided at Didcot in 1944; since then 16 further residential hostels (including Old Oak Common) have been brought into operation in the Western Region, British Railways, providing for 1,100 men. Apart from hostels, 79 canteens provide a full-scale meal service for staff on duty at principal places in the Western Region.

At Old Oak Common sleeping coaches provided in 1945 gave accommodation for the transferred train crews, who at one time numbered 289. The coaches were regarded as a purely temporary measure pending the provision of permanent buildings.

The directors of the former Great Western Railway Company approved a scheme for a permanent hostel at Old Oak Common incorporating many modern facilities for the residents and catering amenities for the whole of the staff employed at the depot, numbering about 2,000 and composed mainly of drivers and firemen, locomotive shed staff, Traffic Department guards, and Yard staff. The approval of the Minister of Transport was obtained and work on the structure began early in 1947. The premises, with their

principal services, were brought into full use on February 20, 1949.

The hostel provides accommodation for 276 residents, with living quarters for the manager and matron and a domestic staff of 23. About 2,000 meals are served daily. A committee representing the residents of the depot staff acts with the management and assists in all matters affecting the interests and welfare of the users. The estimated cost of the building, including equipment, is £250,000.

The amenities enjoyed by the 276 residents include: a separate cubicle for each man; baths, showers, lavatory and washing facilities; sick bay with beds for nine patients; drying room for wet and dirty clothing; recreation room with billiards table, darts, table tennis; reading and writing room; workroom for shoe-repairing and hobbies; dining room with seats for 144. Each cubicle is centrally heated and contains a bed, chair, built-in dressing table, and wardrobe. The cubicles are arranged in four blocks of three floors each.

Residents are charged 1s. a night for a cubicle and pay for their meals as required. Average prices are as follows: breakfast 10½d.; dinner 1s. 2½d.; tea 6d.; supper 10d.

Amenities for the depot staff include a canteen with seating for 224; games room with two billiards tables, darts, and table tennis; concert hall seating 270; meeting room for first-aid classes and committees; washing and lavatory facilities; fully licensed bar operated as a members' club. The staff employed at Old Oak Common

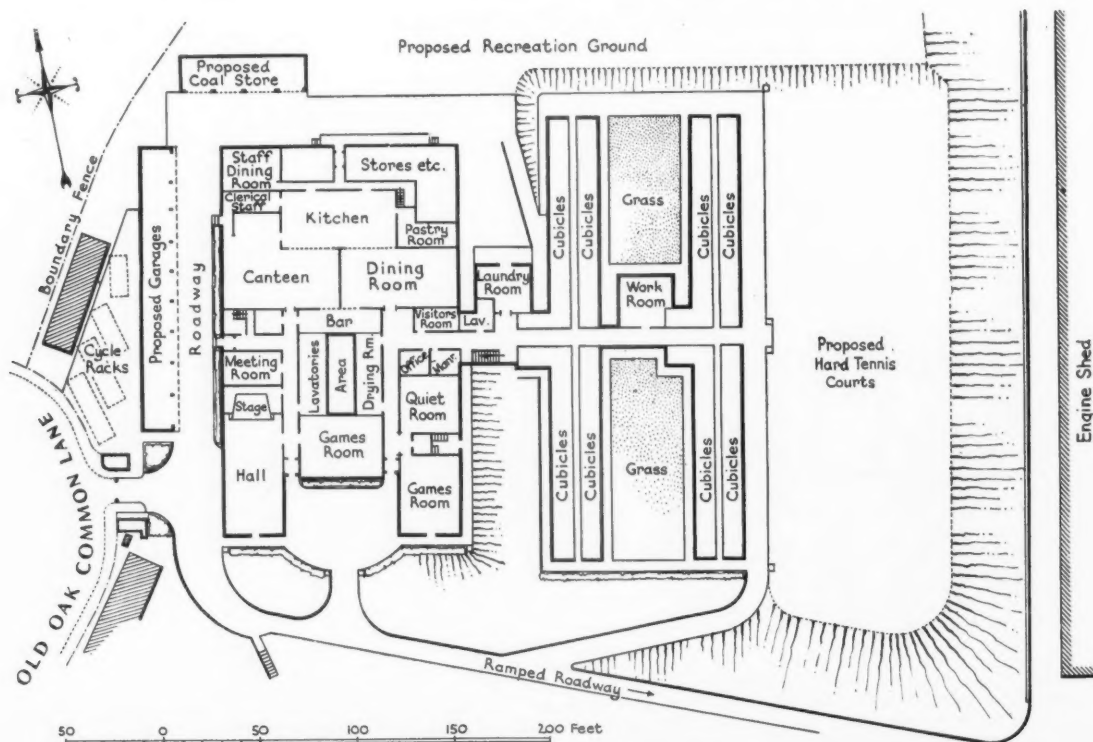
hostel and canteen numbers 63. The new building was constructed by the firm of Persons Limited, to the design of the Great Western Railway Company's architect.

The staff stationed at Old Oak Common includes about 850 drivers and firemen, 175 locomotive shed staff, 350 carriage and wagon staff, 250 workshop staff, 175 guards, shunters and traffic staff, and about 200 miscellaneous workers and supervisors, totalling some 2,000 men and women.

BRITISH RAILWAYS (SOUTHERN REGION) LECTURE & DEBATING SOCIETY.—The annual general meeting of British Railways (Southern Region) Lecture & Debating Society will be held at the Chapter House, St. Thomas' Street, London Bridge, on Thursday, April 7.

UNITED STATES RAILWAYMEN TO BE LAID OFF.—The eastern railways of the United States announced on March 12 that, in expectation of a sharp decline in their coal-hauling traffic because the miners were to cease work on March 14 for a fortnight, they were laying off 55,000 of their employees. If the strike should last longer than two weeks the steel companies may have to take similar action.

POTTERIES MOTOR TRACTION COMPANY.—The net profit of the Potteries Motor Traction Company for the last financial year was £108,087, against £85,582 for the previous twelve months, after providing £40,797 for taxation, against £82,941. The final dividend is 9 per cent., plus a bonus of 5 per cent., both the same as last year, again making 20 per cent. for the year. The company is controlled by British Electric Traction.



Architect's plan of new hostel and canteen buildings at Old Oak Common, Western Region

Old Oak Common Hostel & Canteen Opening Ceremony

Addresses by Mr. K. W. C. Grand, Chief Regional Officer, Western Region, and the Minister of Transport at the opening ceremony

Mr. K. W. C. Grand, Chief Regional Officer, Western Region, who gave the opening address at the inauguration of Old Oak Common Hostel & Canteen on March 16, said that having the three heads of the British transport system present he was automatically sitting in the Trinity, which was something he had never aspired to.

The necessity for the hostels had rapidly become essential during the war, especially at key operating points such as Old Oak Common, and he did not think the Minister of Transport would mind if he referred to the fact that private enterprise in the shape of the Great Western Railway directors had authorised the hostel. Old Oak Common, with its capacity to sleep 216 engines and to employ 2,000 men was a very important place. The new hostel would be the biggest and the most up-to-date installation in the country.

Mr. Grand paid tribute to the work of the architect, originally Mr. Brian Lewis, now in Australia, who had been followed by Dr. Curtis. Another tribute was very well merited by Mr. Humphries, Chief Welfare Officer, who had worked night and day to get the show going, and it was only one of many similar problems he had all over the Region. To the contractors, Messrs. Tersons, who had not only kept to their contract but actually kept to time, Mr. Grand expressed high appreciation.

It took nearly £900,000 a week to pay the wages of the Western Region, and that should make them all the more careful to appreciate what the Railway Executive and the Transport Commission were doing for their welfare. Concluding, Mr. Grand said how delighted he was that not only the Minister had come, but also Sir Cyril Hurcomb and Sir Eustace Missenden.

The Rt. Hon. Alfred Barnes, P.C., M.P., Minister of Transport, said he was delighted that he had been invited to inaugurate the hostel, because he had always been interested in welfare work on a very commonsense and experienced basis. He commented on the Chairman's remark

that he was not quite certain how much credit ought to go the Great Western Railway Company or how much credit to the present Railway Executive. Mr. Barnes said he suffered from no sense of embarrassment in the matter. He considered himself when he was chosen, much to his own surprise and astonishment, to be Minister of Transport. He confessed that he congratulated himself that in regard to the four main-line railways all the way down from the top to the bottom, and especially with regard to the trade unions and their attitude, he was inheriting a very high standard of administration and conduct in operation. He had never considered that it represented any weakness on his part in acknowledging the work that had been done in the past. The history of Britain was a continuous story, and he knew of no page in the history of industry that had no defects and no advantages. Within any nationalisation scheme there would be some weaknesses as well as some mistakes, and he knew of no phase of the industrial system where that had not been apparent, but taking the story as a whole they had nothing of which to be ashamed.

During the war the Ministry of Transport had to pick up the problem of welfare work and carry it on, and the Ministry had done a very good job indeed. Many undertakings of the kind were established throughout the country, largely at Government expense, and he was very gratified that the Railway Executive had done a very good job of work during the previous twelve months under very great difficulties.

The Minister then addressed the residents of the Hostel and said he had often experienced disappointments and discouragements in pursuing the policy of welfare development. He had said at the beginning that it simply could not succeed on expenditure of money by management alone. At one time he had been Chairman of a large co-operative society, the capital of which came from working class homes and the revenue from the expenditure of working class incomes, and

he remembered on one occasion starting welfare and welfare facilities for the staff. He had gone back again twelve months afterwards and had been ashamed of the condition of those welfare facilities.

If Mr. Grand or Sir Eustace Missenden or the Minister himself were to come back a year later they ought to see the place just as well appointed, except for the wear and tear of use, and just as well and complete as it was that day.

He had complete confidence that they would honour a high standard in the future as they had done in the past and he was glad to inaugurate this hostel which would cost approximately £250,000. On the basis of sleeping accommodation, apart from the canteen and other amenities, it worked out at nearly £1,000 a bed for the facilities provided.

Mr. Barnes went on to say that the standard of life had increased not so much in the number of pound notes received at the end of the week; it was also raised by a higher standard of institutions, design, architecture, and services. Every time they improved dining room equipment or coaches the standard of living was raised. That type of capital expenditure did not add a penny and represented an additional charge on the difference between railway charges and freights and road transport charges and freights. They inherited a most difficult problem on the railways of the country because this policy had been held for over a hundred years.

"It is very plain to me," said Mr. Barnes, "that we have reached the limits of increased charges on the railways. You cannot possibly raise the general level of charges to keep in tune or to march with the general increase of the commodity price level of this country, and so those of you who are responsible for railway administration suffer under a handicap that no other body of businessmen in this country have to deal with, but whilst that is the fact, and whilst it represents an injustice as far as those who have to carry the responsibility of administration is concerned, it is inescapable in the field of actuality of affairs today. That being the case, it follows that everyone in the railway industry, because it is a vital service, must be imbued with the need of economy not in the standards but to cut out waste, because wherever there is waste in your system today, it is putting an additional drag on you."



Mr. Alfred Barnes with Sir Eustace Missenden and Mr. K. W. C. Grand at the entrance to the hostel



Mr. Alfred Barnes, Minister of Transport, meeting members of the Old Oak Common Hostel & Canteen Committee on March 16



Presentation of illuminated address to Mr. Barnes by Mr. J. P. Gale



Mr. Alfred Barnes and Sir Cyril Hurcomb with Driver W. Ball and Fireman T. Wilcox

The annual loss of over £2,000,000 that fell on the Railway Executive by needless pilfering must be stopped by the railwaymen themselves. Mr. Barnes said he did not allege that the pilfering was done so much by railway staff, but he was convinced that if there were alertness everywhere, and if everyone were imbued with the spirit to cut out waste, they would collectively make a very good contribution towards that need.

Mr. J. P. Gale, Chairman of the Hostel & Canteen Liaison Committee, said that they would appreciate that his own point of view, while endorsing all that had been said, must obviously be slightly different, having regard to the fact that he was a resident. He regarded his twelve months' experience in the old hostel as a page of personal history which he would not have missed for the world; he had, as a result, formed many associations, many friendships, which he knew would stand the test of time far longer than he sincerely hoped his tenure in the hostel would be. Nevertheless, the hostel had sprung from the needs and necessities of the depot during the war and had begun in temporary accommodation. That had been no sin, but he would like to express his thanks and appreciation to all concerned in the administration of that temporary accommodation. From the point of view of the men at Old Oak Common, the amenities provided in the living quarters were nothing more or less than first class.

At the end of the inauguration ceremony the Minister of Transport received from Mr. Gale an illuminated address which read:—

"We, the undersigned, being the members of the Committee acting on behalf of the staff at Old Oak Common, accord you a hearty welcome and express to you and to the railway authorities generally, our grateful thanks for the provision of this hostel and canteen with all their modern amenities. We trust that this token of our appreciation will provide a happy reminder of this memorable day and that the inauguration of these new welfare facilities will be the means of strengthening the spirit of co-operation with resulting benefits to the railway industry at this important centre of the Western Region."

Also present at the inauguration were:—

Alderman E. J. Lewis, Mayor of Acton; Messrs. J. A. Sparks, M.P.; C. A. Birtchell, Deputy Secretary, Ministry of Transport; G. F. Stedman, Under Secretary, Ministry of Transport; Lieut.-Colonel Sir Alan Mount,

Chief Inspecting Officer of Railways; Mr. B. P. H. Dickinson, Private Secretary to Minister; Mr. C. S. Mason and Lieut.-Colonel R. K. Jago, representing the Ministry of Works; Sir Cyril Hurcomb, Chairman, British Transport Commission; Messrs. J. Benstead, Deputy Chairman, B.T.C.; and F. Gilbert, Principal Staff Officer, B.T.C.

Representing the Railway Executive: Sir Eustace Missenden, Chairman; Messrs. W. P. Allen, Member, H. Adams Clarke, Chief Officer (Staff and Establishment); Dr. H. H. Cavendish Fuller, Chief Medical Officer; Dr. F. F. C. Curtis, Architect; Mr. J. Ness, Chief Officer (New Works).

Representing the Railway Executive Joint Welfare Advisory Council: Messrs. H. J. Comber, Chief Officer for Labour & Establishment, L.M.R.; O. W. Cromwell, Chief Officer for Labour & Establishment, S.R.; P. McCubbin, President A.S.L.E. & F.; R. Openshaw, Rly. Shopmen's Nat. Council; W. T. Potter, President N.U.R.; M. Pounder, Asst. Gen. Secy. N.U.R.; Dr. J. Sharpe Grant, Medical Officer, E.R.; Miss H. Catto, Chief Welfare Superintendent (Women) L.M.R.

Mr. R. M. T. Richards, Deputy Chief Regional Officer, Southern Region; Representing Western Region Officers and Staff: Messrs. H. H. Phillips, Assistant C.R.O.; R. Burgoyne, Regional Staff Officer; Gilbert Matthews, Operating Superintendent; F. W. Hawksworth, Chief Mechanical Engineer; C. Furber, Commercial Superintendent; A. S. Quartermaine, Chief Engineer; F. C. Hockridge, Surveyor & Estate Agent; A. W. Woodbridge, Signal & Telegraph Engineer; H. R. Webb, Stores Superintendent; A. Lane, Chief of Police; H. E. B. Cavanagh, Architect; S. G. Hearn, Asst. Operating Supt.; W. N. Pellow, Loco. Running Supt., Swindon; W. H. Bodman, Staff Asst. to C.M.E.; C. W. Powell, Divisional Superintendent; H. G. Kerry, Divl. Loco. Superintendent; E. T. Davies, Divisional Engineer; C. A. Humphries, Chief Welfare Officer; A. E. Schafer, Area Welfare Officer; Miss E. Brenan, Chief Welfare Supervisor for Women; J. F. Kell, Hostel Manager; and Mrs. Kell, Hostel Matron. Representing the Hotels Executive: Mr. W. P. Keith.

Representatives of the following were also present: the Trade Unions; the Sectional Council; the Local Departmental Committee; Old Oak Common Staff Hostel & Canteen Liaison Committee; the Depot Staff and hostel residents.

The Proposed Sale of the Northern Counties Railway

The Northern Ireland Transport Authority proposes to pay to the British Transport Commission the sum of £2,668,000 for the Northern Counties Railway. Details were given in the Ulster House of Commons on March 22, when Sir Basil Brooke, Prime Minister, moved the following resolution: "That in pursuance of the provisions of Section 65 of the Transport Act (Northern Ireland), 1948, this House approves the arrangement made by the Ulster Transport Authority with the British Transport Commission for the acquisition of their undertaking in Northern Ireland under the management of the Northern Counties Committee, a copy of which has been laid on the Table of the House."

It is provided in the arrangement that the Authority shall pay the Commission interest on the purchase price at 3 per cent. per annum from January 1, 1948, until the date of payment of the purchase price. The Authority is required to undertake, as agents for the Commission, such work and other responsibilities as, immediately before the date of vesting, were undertaken by the N.C.C. in connection

with the Larne-Stranraer and Belfast-Heysam steamship services on like terms or on such other reasonable terms as from time to time may be mutually agreed.

The arrangement requires the parties to co-operate to foster and encourage traffic and intercourse between Great Britain and Northern Ireland, and to this end to maintain the principle of through rates and fares and facilities between places in Great Britain and Northern Ireland.

It is a condition that the Transport Authority shall ensure that provision is made for the payment of compensation on a basis no less favourable than that provided for in the Transport Act, 1947, to officers and servants employed by the L.M.S. Railway Company at December 31, 1947, and who suffer loss or diminution of emoluments or pension rights, or whose position is worsened in consequence of the transfer. The arrangement is not operative until confirmed by a resolution of each House of the Northern Ireland Parliament.

The debate on the resolution was adjourned to enable members to be supplied with more information.

Institute of Transport Dinner and Dance

Some 270 members and their ladies, and guests, assembled on Friday last at the Connaught Rooms, Great Queen Street, London, for the annual dinner and dance of the Institute of Transport. The chair was taken by the President, Mr. David R. Lamb. He was supported by Mr. T. W. Royle, C.V.O., M.B.E., Immediate past-President, and by Sir Frederick Handley Page, C.B.E., Messrs. R. Kelso, J. S. Nicholl, C.B.E., and Gilbert S. Szlumper, C.B.E., past-Presidents, and Messrs. R. Davidson, V. A. M. Robertson, C.B.E., and A. B. B. Valentine, Vice-Presidents, in addition to many Members of Council.

There were no speeches, but the President took the opportunity, after the Loyal Toast, to thank the officers of the Institute, both in London and the Provincial Sections, for their wholehearted support to him in furthering the work. With the cordial co-operation of Mrs. F. A. Coleman, the Chairman of the Modern Transport Publishing Co. Ltd., which had the primary claim on his services, he had been enabled to visit all the Provincial Sections, and to devote a considerable amount of time during the past year to the work of the Institute, which would not otherwise have been possible on the part of the editor of a trade and technical journal. *Modern Transport*, however, had always taken a keen interest in the Institute of Transport, and his colleagues had rallied round him in relieving him of a great deal of his normal duties, so that he could serve the Institute as its President.

An interval of half an hour provided an admirable opportunity for social contacts, and the evening was concluded with dancing.

Among those present were Messrs. F. P. Arnold, A. W. Arthurton, L. H. Balls, R. W. Birch, W. P. Bradbury, O.B.E., A. Bull, O.B.E., Major Burman, Lt.-Colonel F. Bustard, O.B.E., Mr. A. L. Castleman (Chairman, Metropolitan Section), Major F. J. Chapple, D.S.O., M.B.E. (Member of Council), Mrs. F. A. Coleman, Messrs. F. W. Crews (Secretary), P. Croom-Johnson, C.B.E., P. E. R. Graefe, Sir Reginald Hill, K.B.E., C.B., Messrs. T. Graham Homer, S. Kennedy (Hon. Treasurer), Charles E. Lee, A. G. Marsden, C.B.E. (Member of Council), A. J. Pearson, Lt.-Colonel H. Rudeard, O.B.E. (Member of Council), Major-General G. N. Russell, C.B., C.B.E., Messrs. H. A. Shert, C.B.E., M.C., P. J. R. Tapp, C.B.E. (Member of Council), and A. Twidle.

Parliamentary Notes

Railway and Canal Commission (Abolition) Bill

The Royal Assent was given to the Railway & Canal Commission (Abolition) Bill in the House of Lords on March 9.

British Transport Commission Bill

Imperial Chemical Industries Limited and Stewarts and Lloyds Limited have withdrawn their petitions against the British Transport Commission Bill.

East African Railway Developments

In the course of his speech in the House of Commons on March 14 on the East African groundnuts scheme, Mr. John Strachey (Minister of Food) referred to the developments being carried out in connection with the railways in Tanganyika. He said that the present estimate was that the railway would reach the edge of the groundnut area by this autumn. That did not mean that it would be completed, in

the sense that it had to go on through the area, and also be taken from the present starting point, at Lindi Creek, to the new port of Mikindani further down the coast.

All the traffic on the existing railway of Tanganyika was increasing, and it was important that rolling stock, traction power, and so on, be brought up to date. That was being done. A link would in due course be made with the Kenya railway system, which would be important to Tanganyika, giving access to the two northern ports of Tanga and Mombasa. The most significant railway development going on in those areas was, he suggested, in the Lukelidi Valley—the railway at present being built from the new port of Mikindani to the groundnut area. That line had only to be pushed another 300 miles westwards to reach Songea, where, apparently, coal deposits had already been found, and trial borings were promising, and which, if the promises were fulfilled, would provide fuel for that railway. From Songea it was only 80 miles to Lake Nyasa, and, if it was taken across Lake Nyasa by train ferry, or, more ambitiously, round the head of the lake through mountainous country, then it would be within measurable distance of the whole Northern Rhodesian system of railways, which, in turn, linked with the South African railways. In the opinion of the experts, that was the most interesting railway possibility in British East Africa today, because the whole vitally important Rhodesian area of copper and chrome, and, farther south, of chrome and steel, depended almost entirely for egress on the Portuguese port of Beira. Obviously, a new outlet through British territory to the new port of Mikindani would be of enormous value. It would be shorter than the distance to Beira.

Questions in Parliament

London Transport Electric Power

Sir Ralph Glyn (Abingdon—C.) on March 11 asked the Minister of Transport under what authority power had been taken from the London Transport power stations for the grid; what steps he was taking to alleviate the consequent strain on all methods of transport in London and particularly to prevent congestion in London streets caused by travellers being forced to use above-ground instead of Underground transport.

Mr. Alfred Barnes (Minister of Transport) in a written answer stated: The authority for supplying power is section 62 of the London Passenger Transport Act, 1938. No strain is placed on any transport in London as a result of this arrangement, since no current is given to the British Electricity Authority until the full requirements of London Transport have been met.

London Railway Plan

Mr. A. Albu (Edmonton—Lab.) on March 14 asked the Minister of Transport whether, in view of the announcement of the extension of the Bakerloo Line in South London, he would now publish the rest of the Transport Commission's plan for London.

Mr. Alfred Barnes, in a written answer, stated: The British Transport Commission has forwarded to me the report of a working party appointed by it to review the proposals for rail passenger transport improvements put forward by the Railway (London Plan) Committee, and has submitted certain proposals for considera-

tion by the Government. In view of the public interest in this important matter, I have approved that arrangements should be put in hand for publishing both the report of the working party and the views on it which the Commission has submitted to me.

Railway Wagon Replacements

Mr. W. T. Scott-Elliot (Accrington—Lab.) on March 14 asked the Minister of Transport whether a programme of replacement of 10- and 12-ton railway wagons by large-size trucks had yet been settled with his approval under subsection (2) of section 4 of the Transport Act, 1947; over what period of years it was proposed to spread such replacement; and what was the total sum involved.

Mr. Alfred Barnes stated in a written answer: I am advised that a programme of wagon replacements, unless of quite an exceptional character, would not require my approval under section 4 (2) of the Transport Act, and, in fact, no application for such approval has been made by the British Transport Commission.

Horwich Railway Workshops

Captain G. R. Chetwynd (Stockton-on-Tees—Lab.) on March 14 asked the Minister of Transport whether he had approved the proposal of British Railways to build a factory in Lancashire to manufacture railway castings at present made by firms on Tees-side.

Mr. Alfred Barnes, in a written answer, stated: Captain Chetwynd is presumably referring to the scheme for the mechanisation of the foundries of the former L.M.S.R. workshops at Horwich. This was authorised by me in June, 1947.

BELFAST & COUNTY DOWN CLOSURE.—The proposed closing of sections of the Belfast & County Down Railway was discussed in the Ulster Parliament on March 15. Sir Roland Nugent, Minister of Commerce, said then that the matter was really *sub judice*, and the Prime Minister added that the House already had set up a tribunal to decide this question. It is understood that there will be consultations between the mover of the motion, Mr. Andrews (Mid-Down—U.), and his seconder and supporter on the question of tabling a suitable amendment. Mr. Andrews said that the reason for closing the main County Down line was that it was held that, although the Bangor line was profitable, the main line was losing—it was said at the rate of £100,000 per annum. When the directors desired to close the main line about six months ago the Minister of Commerce had said that he could not approve such action and that he would be bound to do all in his power to prevent it. Even if the closing of the main line, continued Mr. Andrews, would mean a reduction in the estimated loss of £100,000 a year, the sacrifice would be greater than the benefit. Mr. Brian Faulkner (E. Down—U.), seconding, said that in 1941 the County Down Railway carried one-third of the number of passengers carried by the Road Board all over Ulster, in 1940 one-tenth of the freight tonnage and one-fifth of the cattle. He suggested the introduction of diesel railcars, reduced season tickets, and the amalgamation of road and rail staffs at offices and depots. The Minister of Commerce replied that he had great sympathy with the arguments of members, but regretted that the form of the motion made it impossible for him to accept it.

Notes and News

Retail Prices Index.—On February 15 last the official index figure, which measures changes in the average level of retail prices compared with the level at the base date, June 17, 1947 (taken as 100), was 109, the same as on January 18.

Draughtsman (Civil Engineering) Required.—Applications are invited from qualified candidates for the post of draughtsman (civil engineering) required by the Nigerian Government Railway, for one tour of 18 to 24 months in the first instance. See Official Notices on page 339.

Institution of Railway Signal Engineers.—Mr. B. J. Powers will read a paper on "Automatic Ticket Machines," before the Institution of Railway Signal Engineers on Friday, April 8. The meeting will be held at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, at 6 p.m.

Lyons International Fair.—The Lyons International Fair, 1949, will be held from April 23 to May 2 inclusive. There are 58 trade groups and five miles of stand frontage. British buyers are asked to book their accommodation before April 10 through Robert Brandon & Partners Limited, 45, Dover Street, London, W.1. For one-, two-, and three-day visits accommodation will be provided in Lyons, but for those making a longer stay accommodation is offered at Aix-les-Bains, whence a railcar will run daily to the fair station at Lyons.

Midland Railway Co. of Western Australia Ltd.—For the year ended June 30 last, gross receipts in Australian currency were £232,724, or £64,319 more than in 1946-47 because of the higher tariffs, the greater volume in goods traffic, and the expansion of road services. Railway passenger receipts declined from £30,663 to £24,722, and number of passengers from 34,356 to 27,908, but corresponding figures for road services showed increases. Goods and livestock tonnage increased by 60,244 and receipts by £47,305. Working expenses at £150,138 showed an increase of £34,221. Net receipts were £82,586, compared with £52,488. After deductions for renewals expenditure, deferred renewals

and tax and interest, etc., a balance of £59,190 results. The directors have decided to pay arrears of interest on the second mortgage cumulative income debenture stock for the twelve months ended December 31, 1945, amounting at 4 per cent. to £23,694. A balance of £35,496 remains to be carried forward.

New Standard British Rail.—The new 109-lb. flat-bottom rails, adopted by British Railways as standard for main lines and other lines carrying intensive traffic at high speed, were rolled on March 21 for the first time in this country at the Cleveland Works, Middlesbrough, of Dorman, Long & Co. Ltd. The same firm will also begin rolling the new 98-lb. flat-bottom rail in the near future.

Successful Scottish Region Boxers.—As a result of the contests between the Scottish and Western Regions, recently held at York, four Scottish representatives went forward to the semi-final stage of the British Railways Amateur Boxing Championships. The successful Scottish boxers at York were: Flyweight, Mr. C. Buchan, Glasgow (St. Enoch); bantamweight, Mr. H. Wright, Kippis; lightweight, Mr. W. Wright, Dundee (East); heavyweight, Mr. J. McDermott, Glasgow (St. Enoch).

Westinghouse Output Increased Substantially.—At the annual meeting of the Westinghouse Brake & Signal Co. Ltd. on March 15, Captain A. R. S. Nutting, Chairman, remarked that some anxiety had arisen from the fact that companies such as theirs could no longer find the finance they needed from their own resources. British industry as a whole was feeling the effect of present methods of taxation and the docile acceptance by British industry of the demands of the tax-gatherers was not a healthy sign. Their Australian companies both showed greatly improved results and their company in India was picking up after the setbacks of previous years. Their associated companies in France and Italy had carried through very substantial capital issues. Production in their own company had increased considerably. Sales figures had reached an exceptionally high level and no less than 50 per cent. of total sales in 1948 were for export. At a subsequent extraordinary general meeting of the company

resolutions were unanimously passed increasing the authorised capital to £1,500,000 by the creation of 300,000 new £1 shares.

John I. Thornycroft & Co. Ltd.: Service Branch.—As from April 1, the service branch of John I. Thornycroft & Co. Ltd. at Pulford Street, London, S.W.1, will be transferred to 363-365, Clapham Road, London, S.W.9. The telephone number of the new branch will be Brixton 6877-6878 and the telegraphic address "Manageable Phone London."

Allowances for Travel to the Continent.—A Treasury announcement on March 18 on currency allowance for tourist travel to Switzerland stated that the amount authorised would be based on the duration of stay and on the scale of hotel charges within the maximum basic of £50 a year for adults and £35 for children under 15. An announcement regarding Belgium and Luxembourg stated that the amount authorised would be based on the duration of stay within a maximum of £35 for adults and £25 for children under 15. Monthly quotas have now been allotted for all three countries.

Western Region Music & Drama Festival.—Over two thousand Western Region railway staff in supervisory, clerical, technical, and uniform grades, and members of their families, are competing in their 19th annual Festival of Music & Drama, which is being held at Reading Town Hall between March 21 and 26. The festival is divided into 120 classes, and has been organised by the British Railways, Western Region, Staff Association. Alderman H. V. Kersley, Mayor of Reading, extended a civic welcome to the contestants on the opening evening, and Mr. Grand, Chief Regional Officer, Western Region, was to be in the Chair at the evening session on March 23. Mr. W. P. Allen, Member of the Railway Executive, will preside at the final session on Saturday evening. Competitions have been in progress from 1 p.m. to 10 p.m., each day, and forty-four trophies are to be awarded.

Eastern Region A.B.A. Championships.—Some excellent boxing was seen in the Railway Executive, Eastern Region, Amateur Boxing Association Championships held at the Corn Exchange, Doncaster, on February 23. Some of the contestants could not play their full part because of injuries sustained in earlier bouts, and welterweight Mr. J. Moore (Peterborough) had no further contest after winning his second preliminary bout in the afternoon; his evening semi-final opponent, Mr. R. M. Belson (Peterborough), could not box due to an injury, and Mr. J. E. Sheffield (Stratford), whom he should have met in the final, also was injured and unable to compete. Middleweight Mr. J. Ashton (Leeds) beat Mr. T. Webb (Leicester) and went on to defeat Mr. W. Lawton (Doncaster). There were only two entrants in the featherweight class, Mr. R. E. Jones (Doncaster) and Mr. E. C. Noble (Liverpool Street), who was the winner. The most thrilling bout was the bantamweight final between Mr. A. Martin (Lea Bridge) and Mr. J. Farricker (Gorton), when first one, then the other, tried to land a decisive blow; Farricker had staggered to his corner and collapsed when the decision was given him. Messrs. F. E. G. Wiles (New Barnet), A. C. Hayes (Norton Folgate), K. Millson (Doncaster), and H. Carroll (Gorton), respectively, won the flyweight, lightweight, light-heavyweight, and heavy-

New Waterloo Station Roofing



A new roof 135-ft. in length has been erected at Waterloo Station, Southern Region, to cover the entire roadway and pavement leading from the station towards York Road

OFFICIAL NOTICES

Crown Agents for the Colonies

APPLICATIONS from qualified candidates are invited for the following post:—

DRAUGHTSMAN (CIVIL ENGINEERING) required by Nigerian Government Railway, Capital Works, for one tour of 18 to 24 months in the first instance. Fixed basic salary according to age and experience up to £970 a year. Outfit allowance £60. Free passages. Candidates must have had good experience in drawing office of a Civil Engineering Railway Department (or Consulting Engineers or Contractors with practice in railway work). Knowledge of design and construction details of civil engineering structures and railway track work is required, including ability to take off quantities, prepare estimates, and draft general specifications. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/N/17417 (3D) on both letter and envelope.

None of the vacancies on this page relates to a man between the ages of 18 and 50, inclusive, or a woman between the ages of 18 and 40, inclusive, unless he, or she, is excepted from the provisions of the Control of Engagement Order, 1947, or the vacancy is for employment excepted from the provisions of that Order.

DRAUGHTSMAN wanted by well-known London technical publishing firm. Must be experienced in preparing engineering drawings suitable for reproduction in high class technical journals. Salary £350 p.a. Write stating age and experience.—Box 286, c/o The Railway Gazette, 33, Tottil Street, London, S.W.1.

LARGE Midland firm of Coachbuilders require Draughtsmen experienced in the design and construction of Public Service Vehicles, both composite and all-metal. Please reply details of age, experience, and salary required to Box 292, The Railway Gazette, 33, Tottil Street, Westminster, S.W.1.

weight championships. The trophies to winners and runners-up were presented by Mr. C. K. Bird, Chief Regional Officer, Eastern Region.

British Railways v. London Transport.

—The first football match between teams representing British Railways and London Transport will take place at Osterley on March 30, starting at 4 p.m. British Railways representatives have been selected from London, Crewe, York, Southampton, Derby, and Coatbridge.

United States Railway Wages Agreement.

—The wage-hour dispute between the American railways and 16 unions was settled on March 20 on terms laid down by a Presidential fact-finding board. Under the agreement, about a million employees begin a five-day, 40-hr. week from September 1 with the same pay as they received for a 48-hr. week. They also receive a "third round" wage increase of seven cents on hour retroactive to last October.

Engineer Buyers & Representatives Association.

—Sir Herbert G. Williams, President, at the first annual general meeting of the Association held on February 7, reported that over 200 members and associate members had been enrolled. There was every evidence that the foundations of the Association had been well laid. There were now branches in London and the Midlands and branch secretaries also had been appointed in South Wales and the West of England. Separate committees of buyers and representatives had been authorised and a technical advisory panel was being organised.

Brush Electrical Engineering Company.

—This year the Brush Electrical Engineering Co. Ltd. is paying a dividend of 10 per cent. on £800,000 of ordinary stock. Trading profit for 1948 was £673,547 and represents an increase of about 20 per cent. on the previous period. An amount of £144,707 has been provided for depreciation, against £119,264, while bank loans and other interest absorb £100,593, against £75,649. Net profit for the year, after meeting various charges, totalled £425,116, while net adjustments arising from previous years were £40,156, giving a total of £465,272, against £357,611. From the net profit, £150,000, against £20,000, has been provided on account of Brush-Ljungstrom turbine reconstruction, which is a non-recurring charge; this, with the provisions made in 1946 and 1947, should cover all costs in this respect. General reserve is to be increased by £250,000. Audited accounts of Mirrlees, Bickerton & Day Limited, and J. & H. McLaren Limited,

together with other companies purchased from Associated British Engineering Limited, show a net profit, before tax payment, of £435,021, which, added to the Brush profit, makes a total for the group of approximately £900,000 or £100,000 more than was estimated at the time of the merger.

Renumbering Austerity Locomotives.

As part of British Railways numbering scheme, details of which were given in our April 2, 1948, issue, the 2-8-0 Austerity locomotives built by North British Locomotive Co. Ltd. and subsequently purchased by the L.N.E.R., are to be renumbered 90000-90100, from Nos. 63000-63100, and the 321 similar locomotives previously on loan will become Nos. 90101-90421. The 99 ex-L.N.E.R. 2-8-0s, Nos. 63101-63199, built by Vulcan Foundry Limited, will be renumbered 90422-90520 and those built by the same firm and lately on loan will be Nos. 90521-90732. The 25 2-10-0 Austerity locomotives will become Nos. 90750-90774.

L.M.R. Ambulance Cup Finalists.

At Blackpool on March 18, nine L.M.R. ambulance teams qualified for the L.M.R. ambulance final and will now compete for the cup at Belle Vue, Manchester, on April 29. This year there was a record entry of 300 teams from all parts. The revived interest of railway staff in ambulance work gave the following four teams their first appearance in the finals:—London Somers Town Goods (340½ points), Derby C.M.E. Erecting Shop (336½ points), Mold Junction (Flintshire) (332½ points), and Ystalyfera (Glamorgan) (347½ points). The remaining five finalists are: Camden "A" Team (390½ points), Derby C.M.E. Boiler Shop "B" (365 points), Crewe Machine Shop "A" (364½ points), Nuneaton Traffic (358½ points), and Warrington (337½ points).

Rapid Unloading Device for Hopper Wagons.

—An American firm has built apparatus for quick discharge of hopper wagons loaded with coal, coke, ore, and like substances. Details given in *Revue Générale de Mécanique* show that the apparatus weighs approximately 5 tons and is slung from a hoist or gantry whence it is lowered to straddle the wagon, gripping the sides. Vibrations of a determined frequency (1,000 a minute) transmitted to the body of the wagon effect complete unloading. No staff is required except to open hoppers and work the apparatus. Two men can unload one 50-ton wagon in from two to five minutes. In the event of the contents being frozen, all that is required is to heat the sides of the wagon

AUTOMATIC Retracting Drill.—No. 1 M.T. floor-mounted Pedestal Drill by Archdale. 12 in. stroke, max. distance table to drill 2 ft. 7 in., automatic hydraulic feed and retraction. Table working surface 15 in. x 13 in. with 3 in. wide surrounding suds trough. Built-in suds pump and tank. Motorised by 1½-h.p. B.T.H. motor for 230/3/50 supply. P.B. control.—Cox & Danks Limited, Plant & Machinery Dept., Faggs Road, Feltham, Middx. 'Phone: Feltham 3471.

RAILWAY AMALGAMATION IN GREAT BRITAIN. By W. E. Simmet. An authoritative account of the course of railway amalgamation in Great Britain up to the end of 1923. Cloth. 8½ in. by 5½ in. 276 pp. 15s. By post 15s. 7d.

THE WORK OF THE RAILWAY CLEARING HOUSE, 1842-1942. An account of the development and extent of the activities of this famous British railway institution. Paper. 9½ in. by 6 in. 24 pp. Illustrations. 2s. 6d. By post 2s. 6d.

with lamps, etc., so as to free the frozen mass from the sides; the shakeout apparatus does the rest.

British Aluminium Company Results.

The total profits of the British Aluminium Co. Ltd. for 1948 amounted to £1,860,342, against £2,132,812, and £332,703, against £308,367, was brought in from the previous year. The transfer to general reserve is repeated at £200,000, and £250,000, against nothing in the previous period, is placed to reserve in respect of the increased cost of replacement of plant, leaving £573,432, against £547,203. A final ordinary dividend of 6 per cent. again makes 10 per cent. and £358,952 is carried forward. Depreciation provisions now total £2,855,276 and general reserve stands at £2,625,000.

International Society of Soil Mechanics & Foundation Engineering.

—At the Second International Conference on Soil Mechanics & Foundation Engineering held at Rotterdam in June, 1948, a Society was established for promoting international co-operation in the sphere of soil mechanics and its practical applications. The statutes of the Society provide for a number of national organisations, and the British Section of the Society has now been formed and is administered by the British national committee. Full particulars may be obtained from the Secretary to the British national committee, at the Institution of Civil Engineers, Great George Street, London, S.W.1.

Southern Region Motorcar Vessels.

To motorists taking their cars to the Continent this summer the Southern Region offers a choice of five routes on which special services will operate. On the Dover—Boulogne route the *Dinard*, largest car-carrying vessel in the fleet, with space for 70 cars, will operate daily from May 27 to the end of October. The *Autocarrier*, with space for 25 cars, will work the Folkestone—Calais route daily from July 15 to September 30. On the Dover—Dunkerque route the ferry steamers *Hampton Ferry*, *Shepperton Ferry*, and *Twickenham Ferry*, each with large steel garages for cars, will provide regular services, and throughout the summer, day and night services will be available by this route. Motorists crossing via Newhaven—Dieppe will be conveyed by the motor vessels *Nantes* and *Rennes*, jointly owned by the British Railways and French National Railways, this service to run daily from April 1 to October 31. A feature this year will be the introduction of a new Belgian motorcar carrier on the Dover—Ostend route operating three times weekly in each

direction from June 4 to September 14. This vessel will be named the *Car Ferry*. Petrol tanks of cars carried on these special services need not be emptied.

London Transport Posters.—On April 5, the Prime Minister will open an exhibition of original paintings for posters produced by London Transport between 1908 and 1949. The title of the exhibition, which is to be held at the Victoria and Albert Museum, will be "Art for All."

North British Locomotive Orders.—In our issue of March 4 it was reported that the North British Locomotive Co. Ltd. had received an order from the Egyptian State Railways for 18 locomotives, each valued at roughly £20,000. Other orders placed recently include five locomotives for the Sudan Railways, 16 for the East African Railways & Harbours, and 10 for the Western Australian Railways.

Forthcoming Meetings

March 25 (Fri.).—Institution of Mechanical Engineers, Storey's Gate, St. James's Park, London, S.W.1, at 6 p.m. Annual general meeting for corporate members only. Annual report.

March 25 (Fri.).—Institution of Locomotive Engineers, annual luncheon at the Dorchester, at 12.15 for 1 p.m.

March 25 (Fri.).—Mansion House Association on Transport, at Trocadero Restaurant, W.1, at 1 p.m. Annual luncheon, followed by annual general meeting.

March 26 (Sat.).—British Railways, Southern Region, Lecture & Debating Society. Visit to R.M.S. *Orontes*, Tilbury Docks.

March 28 (Mon.).—Institute of Traffic Administration, Tyneside Centre, at the County Hotel, Newcastle-on-Tyne, at 7 p.m. "The Future of the Institute of Traffic Administration," by Mr. L. C. Harrison.

March 28 (Mon.).—Institute of Traffic Administration, Portsmouth and Southampton Centres, joint meeting at Dolphin Hotel, Southampton, at 7.15 p.m. "Some Practical Considerations in Passenger & Cargo Working at the Port of Southampton," by Mr. A. E. Powell.

March 29 (Tues.).—Institute of Transport, Metropolitan Graduate & Student Society, at 80, Portland Place, London, W.1, at 5.30 for 6 p.m. "Power Signal Operation," by Mr. H. G. M. Viney.

March 29 (Tues.).—Institute of Transport, Guildford Group, at the Star & Garter Hotel, Woking, at 6.30 for 7 p.m. "The Economic & Traffic Aspects of a Channel Tunnel," by Mr. C. E. R. Sherrington.

March 29 (Tues.).—Institution of Civil Engineers, Great George Street, Westminster, London, S.W.1, at 5.30 p.m. Film: "Production, Distribution and Use of Ballast on British Railways."

March 31 (Thu.).—Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2, at 5.30 p.m. "Overhead Line Regulations," by Mr. H. W. Grimmit.

April 2 (Sat.).—Railway Students' Association, London School of Economics & Political Science, University of London. Visit to National Physical Laboratory, Teddington. The party will assemble at Teddington Station booking hall, Southern Region, at 2.15 p.m.

Railway Stock Market

Steadier conditions have developed in stock markets as a result of the recent heavy fall in the industrial sections. Lower prices attracted a little buying, but, although the rally in industrials was widespread, rises were mostly very moderate when compared with the extent of recent falls. Continued firmness of British Funds has also helped sentiment. It is assumed that as far as markets are concerned the Budget is likely to prove a bull point for gilt-edged stocks, and important operations in this section are believed to be in prospect. Creation of £14½ million of British Airways stock attracted attention because it seems probable that this will come on the Stock Exchange. This stock is dated 1980-83 and therefore has a longer life than any existing nationalisation stocks. The assumption is that the £200 million of British Gas Stock to be issued on May 1 will be a 3 per cent. stock and even longer-dated than the Airways Stock. These factors have helped the firm undertone in British Funds. British Transport 3 per cent. (1978-88) was 101½ and 3 per cent. Transport (1968-73) was 101½.

There was only moderate business in foreign rails. The Brazil section showed small fluctuations in the continued absence of rumours of any fresh take-over moves. Great Western of Brazil eased to 110s., and Leopoldina was £8½, with the preference back to 28½. Leopoldina debentures, however, were inclined to attract buyers. The 4 per cent. debentures were 85, and the 6½ per cent. 107, but Leopoldina Terminal 5 per cent. debentures eased to 84. San Paulo ordinary fell to 141.

A feature was a revival in United of Havana 1906 debentures, which rose to 15, but later showed a partial reaction to 14. Canadian Pacific receded to 18½, the results showing lower net earnings owing to higher working expenses, which emphasises the need for increased freight rates.

B.A. Central 4½ per cent. first debentures marked 32. Chilian Northern 5 per cent. debentures also changed hands around 32. Antofagasta ordinary was 8½ although the preference eased to 56½. Manila "A" debentures have remained firm at 85 and the preference shares were 8s. 1½d. Mexican Railway 6 per cent. debentures were 86½. Beira Railway bearer shares remained at 46s.

Road transport shares have been firm with Lancashire Transport higher at 90s., Bristol Trams 90s. 6d., and Scottish Motor Traction 104s. 6d. B.E.T. deferred stock fluctuated around £1,830. Shares of companies in the B.E.T. group are being favoured because in most cases yields are quite attractive and prospects of dividends being maintained are considered promising. Assumption is that there may be no question of nationalising the operating concerns in the near future because they are not willing to negotiate on a voluntary basis.

Iron and steel shares remained steady generally, those in the nationalisation groups being helped by their take-over value, which continued to have a steady influence on market prices. Babcock & Wilcox at 67s. 3d. recovered part of an earlier decline and T. W. Ward became firmer at 64s. 9d. Vickers improved to 29s. 3d. as the market expects the dividend to be maintained. It is also possible that the report may give an estimate of the take-over valuation of the holding in the English Steel Corporation. General Refractories at 23s. 6d. have remained under the influence of the larger profits and surprise increase in the dividend.

Shares of locomotive building and engineering companies have been steadier. Beyer Peacock were 22s. 6d., Vulcan Foundry better at 23s. 6d., North British Locomotive 21s. 4½d., Gloucester Wagon 55s., and Wagon Repairs 5s. shares 20s. G. D. Peters 5s. shares were 16s. 6d. In other directions Pullman Car "A" changed hands around 20s. 6d.

Traffic Table of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffics for week		No. of week	Aggregate traffics to date			
				Total this year	inc. or dec. compared with 1947/48		Total	Increase or decrease		
							1948/9			
South & Central America	Antofagasta...	811	13.3.49	£ 74,680	+	£ 21,770	10	£ 711,510	+	£ 150,680
	Bolivar ...	174	July, 1948	\$28,960	+	\$69,357	30	\$471,287	+	\$301,893
	Brazil ...	...	...	...	...	...	...	...	...	...
	Cent. Uruguay ...	970	6.11.48	32,712	+	2,978	18	593,105	+	7,652
	Costa Rica ...	281	31.1.49	35,772	+	3,648	31	250,009	+	12,870
	Dorada ...	70	Jan., 1949	31,649	+	8,549	4	31,649	+	8,549
	G.W. of Brazil ...	1,040	12.3.49	38,700	+	1,200	10	415,900	+	7,200
	Inter. Ctl. Amer. ...	794	Jan., 1949	\$1,089,802	+	\$198,851	4	\$1,089,802	+	\$198,851
	La Guaira ...	223	Feb., 1949	\$105,699	+	\$15,467	8	\$215,995	+	\$47,685
	Leopoldina ...	1,920	12.3.49	45,295	+	1,087	10	486,450	+	73,523
	Midland Uruguay ...	319	Sept., 1948	19,608	+	3,123	12	67,355	+	16,721
	Nitrate ...	382	15.3.49	18,176	+	6,954	11	83,532	+	26,531
	N.W. of Uruguay ...	113	Sept., 1948	5,686	+	1,213	12	16,335	+	1,999
	Paraguay Cent. ...	274	11.3.49	£103,725	+	£32,340	36	£3,773,069	+	£1,344,182
	Peru Corp. ...	1,059	Feb., 1949	221,585	+	69,198	35	1,604,881	+	245,802
	Salvador ...	100	31.12.48	c267,000	+	c16,000	26	c776,000	+	c53,400
	San Paulo ...	153	...	...	...	...	...	...	...	...
	Canada	Taital ...	156	Feb., 1949	11,595	+	2,600	35	68,930	+	10,325
United of Havana ...		1,301	12.3.49	\$481,518	+	\$113,783	36	\$9,066,496	+	\$3,183,838
Uruguay Northern		73	Sept., 1948	1,072	+	52	12	3,308	+	111
Various	Canadian National...	23,473	Jan., 1949	9,327,250	+	826,250	4	9,327,250	+	826,750
	Canadian Pacific ...	17,037	Jan., 1949	6,941,750	+	710,250	4	6,941,750	+	710,250
	Barst Light*	202	Feb., 1949	33,367	+	9,677	48	305,677	+	32,505
	Beira ...	204	Dec., 1948	110,159	+	16,866	13	365,307	+	12,394
	Egyptian Delta ...	607	20.1.49	18,286	+	2,075	42	596,981	+	110,321
	Gold Coast ...	536	Jan., 1949	243,578	+	28,590	44	2,145,956	+	538,937
	Manila ...	...	...	...	...	...	...	...	...	...
	Mid. of W. Australia ...	277	Jan., 1949	27,203	+	174	31	203,052	+	40,523
	Nigeria ...	1,900	Dec., 1948	418,702	+	77,374	37	3,366,011	+	774,561
	Rhodesia ...	2,445	Sept., 1947	643,980	+	102,833	52	6,787,603	+	612,938
South Africa ...	13,347	26.2.49	1,409,917	+	106,156	47	64,127,264	+	3,862,553	
Victoria ...	4,774	Nov., 1948	1,452,889	+	60,190	22	—	—	—	

*Receipts are calculated @ 1s. 6d. to the rupee